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Contents

An asterisk* indicates a peer-reviewed paper

Front cover: Nacreous clouds seen over Hull on the morning of 2 February 2016 (see p14).
Photo: *B. Warrington*

Back cover: The Ribblehead Viaduct from Ingleborough, with the limestone pavement of Scar Close NNR visible in the middle distance. The VC64 Excursion will visit this area in August (see pp76-79).
Photo: *P. Simmons*

The Naturalist

Editorial: Housekeeping

Printing *The Naturalist*

We apologise to our readers for the late delivery of *The Naturalist* 1090. This was a consequence of the Boxing Day floods in Leeds, when the River Aire flowed through the works of our printers, Duffield Ltd, seriously damaging the printing machinery and destroying stocks of paper and inks. The immediate consequence was that Duffield ceased to trade. Most of the staff and the work in progress were transferred to Instantprint in Rotherham, who printed issue 1090. Instantprint, however, was not interested in taking over the contract in the longer term. This and future issues of *The Naturalist* will be printed by Swallowtail Print, who also print the *Yorkshire Bird Report*.

New blood for the Editorial Board

The Editorial Board, currently in its own judgement comprising four old men, is seeking to swell its numbers with new talent. The work is not onerous: editing and commenting on submitted articles, proof-reading, finding referees and refereeing in-house, soliciting papers from potential contributors, perhaps writing the odd editorial. The Board meets three times a year in Leeds when lunch is provided. If you feel you have the skills for the job or would like to acquire them please contact us. Being an elderly white man is not a requirement! Indeed we would welcome younger members of all gender so that we can all retire.

We want more articles

Persuading people, members and non-members alike, to write and/or submit articles for publication is one of the activities of Board members. Our sub-title is the *Journal of Natural History for the North of England* which defines the geographic scope of acceptable submissions. Asia would not in normal circumstances be encompassed by this. Natural history should be interpreted broadly. In its present form *The Naturalist* arose from a merger of its older form with The *Bulletin* and *Bulletin*-style articles are very much welcomed. The paper by Jill Lucas on the Stanley misericords in the last issue is a classic of this type.

And new authors

One of the central aims of the Editorial Board is to broaden our editorial base by encouraging YNU members without experience of writing papers to write for us. We stand ready to assist interactively in the writing process by helping authors in any way needed from helping to focus subject matter and presentation structure down to suggesting alternative words and phrases. Please do not be put off from trying; we are a friendly bunch of old men.

A roll of the dice: the unnatural history of large house spiders (*Tegenaria*: Agelenidae) in the British Isles

The Presidential Address delivered following the Annual General Meeting on 14th November 2015.

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Introduction

It is often the case that we know much less about the biology of common and widespread species than rarer ones. Grants are more readily available for research on the ecological requirements of rare species of conservation concern, in order to save dwindling populations. It might also be assumed that for common species, being common, we know all there is to know already. This is seldom true. Here I discuss research conducted at the University of York over the past 35 years on a very frequently encountered guild of large house spider species, the *Tegenaria atrica* group[1] (Plate 1a, centre pages). These spiders are the scourge of all arachnophobes; yet dig deeper and the subjects of their fear reveal intriguing patterns of distribution and recent range expansions. They are also providing insights into aspects of interspecific interactions, which could determine the species' evolutionary futures.

Background

My interest in this particular group of spiders was kindled around 1980 when I was helping Clifford Smith map species distributions for his *Atlas of Yorkshire Spiders* (Smith, 1982). Merrett (1980) had just published a paper which sought to clarify the distinguishing features of species within the *Tegenaria atrica* group[1]: *T. saeva* Blackwall, 1844, *T. gigantea* Chamberlin & Ivie, 1935 (= *duellica* Simon, 1875) and *T. atrica* C.L.Koch, 1843 itself, and plotted their distributions. From the relatively few records then available, it appeared that *T. saeva* was found predominantly in the West Country and Wales with *T. gigantea* occupying the eastern and central parts of England. *Tegenaria atrica* records were rare and well scattered, apparently the result of infrequent, accidental importation of individuals from continental Europe or the Republic of Ireland, where it is common. Given these tentative distributions, the discovery of several *T. saeva* in my garage in York was unexpected. This prompted Clifford and me to organise a survey of large house spiders across Yorkshire, but concentrating on York and its environs. We were aided in our task by ample newspaper and television coverage – large, hairy spiders always go down well with the media. To our surprise, *T. saeva* turned out to be the commoner of the two species in York. We also found that some of the surrounding villages apparently contained only *T. saeva* or only *T. gigantea*, although most samples contained both species (Oxford & Smith, 1987). It seemed highly unlikely that villages just a few miles apart offered domestic habitats distinct enough to favour one species or the other. Most probably, a species' presence or absence was merely a result of random colonisation events. This was the first inkling that chance – a roll of the dice – plays a major role in determining the distributions of these two species.

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[1] The nomenclature used here is that in the latest checklist of British spiders (Merrett, Russell-Smith & Harvey, 2014).

Mapping the distributions of *Tegenaria saeva* and *T. gigantea*

The discovery of *T. saeva* apparently 'in the wrong place' prompted a more thorough investigation of distributions of the three *Tegenaria atrica* group species in Britain. The Yorkshire survey entailed householders bringing live spiders to various depositories spread around York and further afield in the county. A reliance on the cooperation of the general public posed a serious logistical problem for mapping spiders more widely. As a result, a graduate student, Peter Croucher, and I developed a 'fishing' technique to enable us to catch large house spiders from habitats other than domestic premises (Oxford & Croucher, 1997). This entailed simply putting a fisherman's maggot onto a web and waiting for the incumbent to appear from its often impenetrable retreat. The spider is swept from the web with a hand and enticed into a specimen tube. Later, technology largely replaced the maggot in the form of a sonic toothbrush (Oxford, 2013), the vibrations of which mimic the beating wings of a medium-sized fly. These techniques revolutionised the mapping of *Tegenaria* distributions and enabled us to collect specimens from tree crevices, stone walls and the exterior of buildings. Intensive work along the south coast and in Yorkshire (Croucher, 1998), extensive collections from elsewhere (GSO and others), and appeals to the general public *via* natural history societies and the media have enabled us to generate a comprehensive picture of species distributions.

The distributions of *T. saeva* and *T. gigantea* are shown in Plate 1b (centre pages), updated to 31st December, 2015. The vast majority of the records shown have been verified by GSO or Peter Croucher. For reasons discussed below, species diagnosis, especially from some parts of the country, can be tricky; misidentified records are not uncommon. For this reason, maps available from the National Biodiversity Network, or even the Spider Recording Scheme, websites appear to be less clear-cut than that shown in Plate 1b. As far as possible we identify spiders in batches, without regard to which part of the country individuals come from, so that our identification of difficult specimens is not biased by knowledge of geography.

South of an east–west line drawn along the North Wales coast the distributions of *T. saeva* and *T. gigantea* suggested by Merrett (1980) are fully supported. The species are almost entirely allopatric across most of England and Wales, separated by geography such that they never interact. They meet and overlap in a relatively narrow band which runs from central Dorset northwards, approximately following the Welsh border (Plate 1b). This pattern is illustrated most clearly in the inset to Plate 1b, where species distributions are interpolated across the majority of England and Wales (Croucher *et al.* 2007). Data from further north were not, at the time, sufficient to apply this technique. In the zone where the species co-occur, some specimens show intermediate morphological characteristics of the female epigyne or the male palp, the only external features that allow species identification. These individuals seemed to be the products of interspecific hybridisation (Oxford & Plowman 1991), a conclusion later confirmed by studies of molecular markers (Croucher, 1998; Croucher *et al.* 2004).

North of the line drawn along the North Wales coast the clear, east–west distinction breaks down and both species can be found almost anywhere (Plate 1b). The situation Clifford and I found in Yorkshire is a reflection of this geographical homogenisation. A consequence of the enhanced contact between the two species is an increase in the rate and degree of hybridisation. In Yorkshire, for example, morphometric studies have shown that what appear to be 'good' *T. saeva* and 'good' *T. gigantea* are, in fact, more similar to one another than are specimens taken from within deeply allopatric locations further south (Croucher, 1998; Croucher *et al.*, 2007). This is

evidence for extensive past, and current, gene flow and introgression, the incorporation of genes from one species into the other. The consequences of this are discussed later.

What determines species distributions?

Consider first the distributions of species south of the line drawn along the North Wales coast. It has been shown that the geographical position of the contact zone, at least in central Dorset, appears to have been stable for at least a century (Oxford, 2009), and possibly for much longer. In the British Isles, major climatic gradients tend to vary in an approximately southeast to northwest direction, with the former experiencing a more continental climate, and the latter a more oceanic one (e.g. Chandler & Gregory, 1976). Mean altitude, by chance, also increases towards the north and west, steepening the wetness gradient through orographic precipitation (Atkinson & Smithson, 1976). It is therefore inevitable that east–west distributions of species in Britain will be highly correlated with a number of climatic variables, but the question is, are they causative?

Climate models

For *T. saeva* and *T. gigantea* this question was investigated by Anderson *et al*. (2009) who built predictive general linear models (GLMs) of distributions using, as a training set, empirical spider data and a whole suite of climatic and other variables within an east–west band drawn across Wales and central England. As expected, presence and absence of species were strongly associated with a number of climatic factors. When this model was used to predict distributions of species south of the Severn estuary, an extremely good fit to the observed pattern was obtained. However, when the model was applied to northern England, the fit of observed and predicted was no better than random. The conclusion was that if climate determined species distributions in the south, it appeared not to do so in the north. Alternatively, climate might indeed be important but species in the north may not yet have reached a stable distribution with respect to these factors (see below). There is another consideration that seems to argue against a climatic influence. Large house spiders are not only associated with human habitations, but also live outside in more natural habitats. If climate variables are important, one would expect that at least within the zone of overlap there would be a difference in the identities of species taken from the benign environment of buildings and those collected in the wild. Such a pattern has not been detected (Oxford & Smith, 1987; Croucher, 1998).

Human introductions

How else might the east–west distributions of *Tegenaria* species across England and Wales be explained? Unlike many spiders these species do not disperse long distances on gossamer (Bell *et al*., 2005) and so their large-scale dispersal is probably a result of hitch-hiking with humans. Towards the end of the last glacial period, some 10,000 years ago, the climate of Britain would not have been suitable for these species and they must have been introduced subsequently. In continental Europe, both species have predominantly Atlantic ranges (Portugal, Spain and France) (Maurer, 1992; Van Helsdingen, 2016), although little is known about their fine-scale distributions. Human movements from Europe to the British Isles have traditionally followed two routes: from the Low Countries into eastern England and from western France and the Iberian peninsula into western England, Wales and Ireland (Oppenheimer, 2006; Leslie *et al*., 2015). Indeed, the distributions of *T. saeva* and *T. gigantea* in Plate 1b correspond approximately to those of the Britons and the Saxons, respectively (see Figure 3c in Leslie *et al*., 2015). The details are, of course, unknown but the potential for separate colonisations of the two large house spider species is well established. It has been suggested that the species slowly spread across southern and central England and Wales, building up large populations until they met in the present zone of overlap

(Oxford, 2011). The stabilisation of this pattern may depend on subtle interactions between the species such that when one is well established, invasion of the other is prevented. Indirect evidence for such interspecific interactions is discussed later. It is also the case that individuals of one species transported into the land of the other may either die without reproducing or hybridise with the local species and, after subsequent backcrosses, characteristics of the displaced become swamped by those of the resident — they 'hybridise away' (Croucher *et al*., 2004; Oxford, 2011). If these present-day patterns really are a result of inoculation by humans then they present another example of how chance influences species distributions; another roll of the dice.

The situation in the north

Documentary evidence, museum material and personal recollections all suggest that prior to the mid-1960s, with just a few exceptions, large house spiders were not found in Yorkshire, Lancashire and counties further north (Oxford & Smith, 1987; Oxford, 2009, 2011). It seems that both *T. saeva* and *T. gigantea* rapidly expanded northwards at this time, presumably from neighbouring counties to the south. The reason(s) for these increases in range are unknown (Oxford, 2009) but are again probably mediated by human transportation. It was argued above that climate is probably not responsible for determining the position of the contact zone in England and Wales because distributions in houses and from the wider countryside correspond. Using the same argument, distributional changes in northern England and Scotland are probably not a response to recent climate change.

The broad-scale mixing of the species had important implications for their interactions, leading to hybridisation and introgression. As mentioned earlier, the relatively recent presence of the two species in Yorkshire and beyond may be a reason for a lack of associations with climatic variables if, indeed, these are influential in determining species distributions. It is highly likely that the local presence or absence of the two species across northern England and Scotland can be explained by chance colonisation events.

Hybridisation and its consequences

As mentioned, across most of England and Wales, *T. saeva* and *T. gigantea* are allopatric. The relatively narrow band of overlap from Dorset northwards along the Welsh border, and the much broader zone across the whole of northern England and Scotland, provide the opportunity for interspecific matings. The presence of individuals with intermediate genital structures in these areas suggests that this does happen (Oxford, 2011). Croucher *et al.* (2007) analysed the proportions of spiders with intermediate morphologies in the area around York and in a comparable area centred on the overlap zone in Dorset. Two different analyses, which took into account the intimacy of species contact in the two areas, strongly suggested that there are relatively fewer hybrids found on the south coast, and more in Yorkshire, than would be expected on the assumption that the propensity to hybridise, given the opportunity, is the same in the two areas. Thus in Yorkshire, hybridisation is rampant compared to that in the overlap zone further south. This begs the questions of how often interspecific matings take place and what are their results?

Interspecific matings

During his investigation of interactions between *T. saeva* and *T. gigantea*, Croucher (1998) set up a number of both intra- and interspecific single-pair crosses in the laboratory, using material from deeply allopatric zones on the south coast and from the zone of overlap in Dorset. More recently, in 2008, I have done the same with spiders collected from west Wales and central eastern

England. The success rate of all 120 crosses is shown in Figure 1 (data from Oxford & Croucher, 2014).

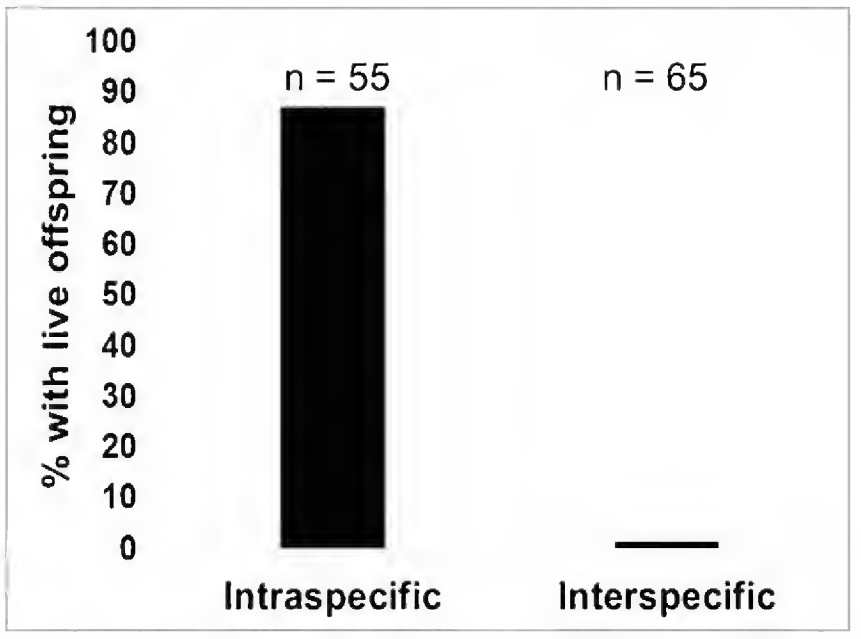

Figure 1. Success rate of intra- and interspecific crosses between *Tegenaria saeva* and *T. gigantea* under laboratory conditions. n = number of crosses.

Forty eight out of the 55 intraspecific matings produced viable offspring, whereas just two out of 65 interspecific matings were successful. One has to bear in mind that in these laboratory matings there was no possibility of (a) competition between males, and (b), sperm competition within multiply-mated females, and so the estimate of hybridisation success is likely to be higher here than that in the wild. Croucher's studies stopped at producing F_1 offspring but my crosses were specifically designed to examine the morphology of known F_1, F_2 and reciprocal back-cross progeny, in order to examine the genetics of diagnostic morphological features and to calibrate intermediate phenotypes found in the wild. Interspecific hybrids, once produced, mate with each other and backcross to both parent species with a success rate indistinguishable from that found within species. The factor impeding hybridisation is clearly acting during the initial courtship between males and females of different species.

The willingness of a male to court and mate was no different when partners were of the same or of different species, implying that the web-borne pheromones that indicate a virgin female are conserved across the species. Female co-operation was also the same, irrespective of the species of male courting. The critical feature turned out to be the length of time for which a male was able to insert his palp into the female epigyne. In interspecific matings, at least some insertions lasted for more than about 40 seconds whereas in the unsuccessful interspecific crosses insertions were on the whole considerably shorter than this. The two successful interspecific crosses had some insertions above the 40 second threshold (Figure 2 shows the data from the later set of crosses only, for the full dataset see Oxford & Croucher, 2014).

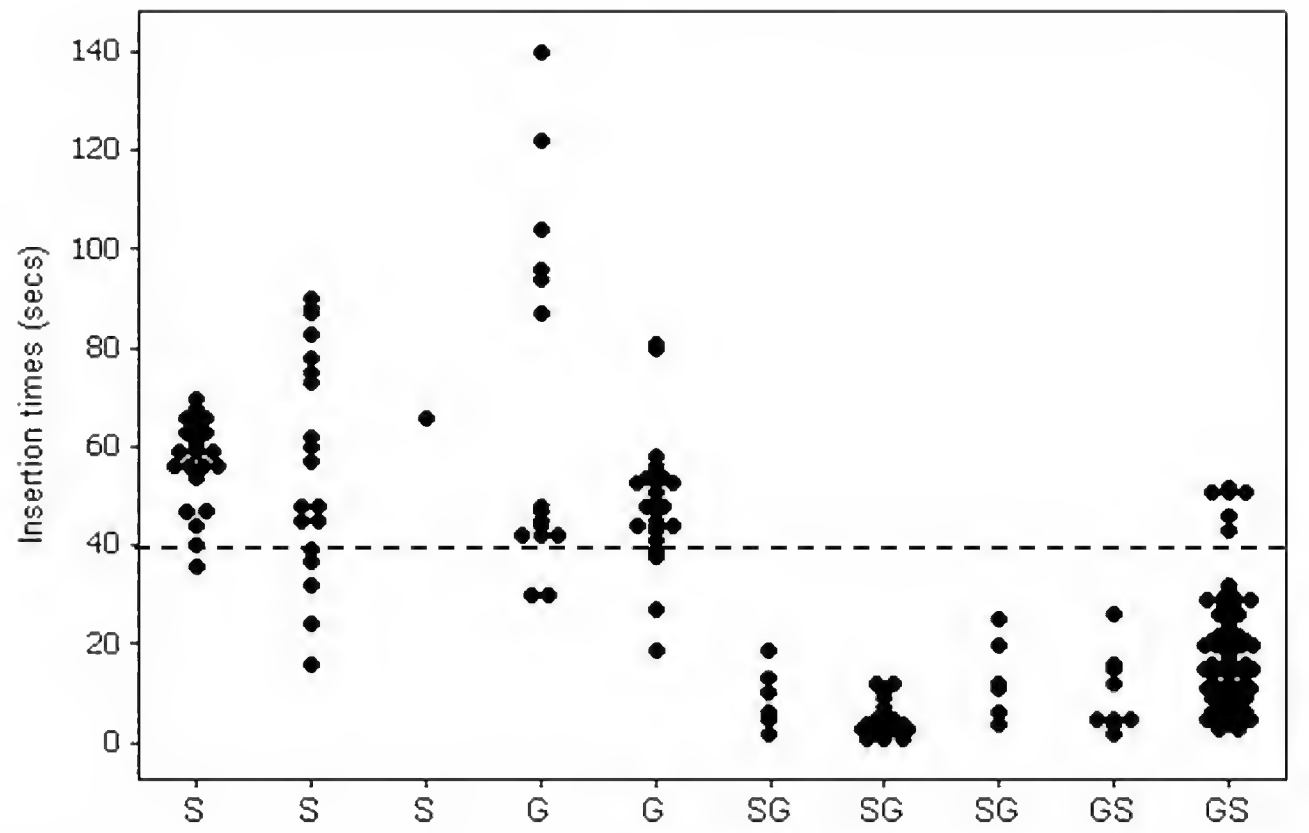

Figure 2. Measurements of male palp insertion durations for intraspecific (S = *T. saeva*; G = *T. gigantea*) and interspecific (SG and GS, female denoted first) crosses. Data shown are from the 2008 collections (see Oxford & Croucher, 2014 for details and the full dataset). The line at 40 seconds suggests a minimum insertion duration required for successful insemination; of the interspecific crosses shown, only the last produced live offspring.

In summary, the barrier to hybridisation between *T. saeva* and *T. gigantea* appears to be almost entirely mechanical; the male palp simply slips out of the female epigyne if it is the wrong species. Very occasionally, the palp insertion lasts long enough for sperm to be transferred and from that point on it seems to be as successful in fertilising eggs as sperm from the female's own species. Once produced, F_1 hybrids can cross between themselves and with both parent species with ease, presumably because their intermediate genital morphology is more compatible with that of their mating partners than was the case with the initial interspecific crosses. We have found no indications that F_1, F_2 and back-cross progeny are less fit than the offspring of intraspecific crosses, at least under laboratory conditions. A positive feedback is therefore set up which favours ever-increasing introgression between the two species.

The case of *Tegenaria atrica*

What of the third member of the *Tegenaria atrica* group, *T. atrica* itself? As mentioned, this species in Britain was generally regarded as an occasional vagrant that failed to establish breeding populations. In 1995 David Smith, a British Arachnological Society member from Burnopfield, Co. Durham, began keeping a record of the spiders found in his house and garden and, to his surprise, discovered a very high proportion of *T. atrica* amongst the large house spiders present. This was apparently the first self-sustaining population of the species in Britain (Smith & Oxford, 2009). We speculated that he might have brought a gravid female back from his continental holidays and, being a newish house, the species may have established in the absence of *T. saeva* and *T. gigantea*. However, he extended the search to his immediate neighbourhood and discovered that *T. atrica* was present throughout. Over

the next few years (2011 – 2013), we expanded the survey to cover the whole of the Newcastle upon Tyne area. We undertook our own fieldwork, examined museum specimens and, *via* the media, encouraged the public to collect and submit spiders found in their own homes. The results were most unexpected (Oxford & Smith, 2014); *T. atrica* was found to be established over a huge area of northern Co. Durham, Tyne & Wear and south-eastern Northumberland (Figures 3 & 4).

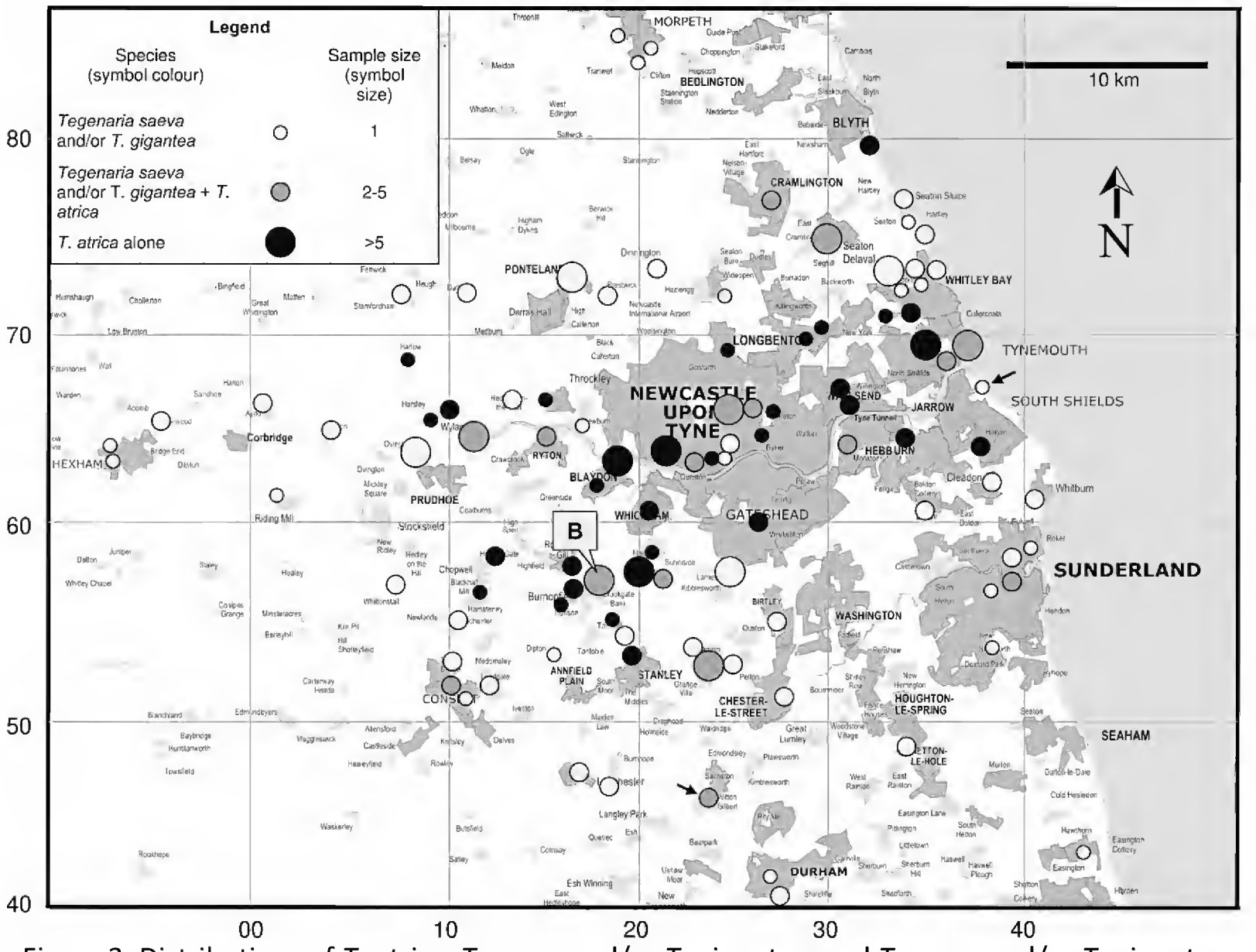

Figure 3. Distributions of *T. atrica*, *T. saeva* and/or *T. gigantea*, and *T. saeva* and/or *T. gigantea* + *T. atrica* in the area around Newcastle-upon-Tyne. Species combinations are indicated by symbol shade and an indication of sample size by symbol size. The original *T. atrica* population from Burnopfield, County Durham reported by Smith & Oxford (2009) is indicated as **B**. Marginal numbers are hectad grid squares within 100 km square NZ of the National Grid.

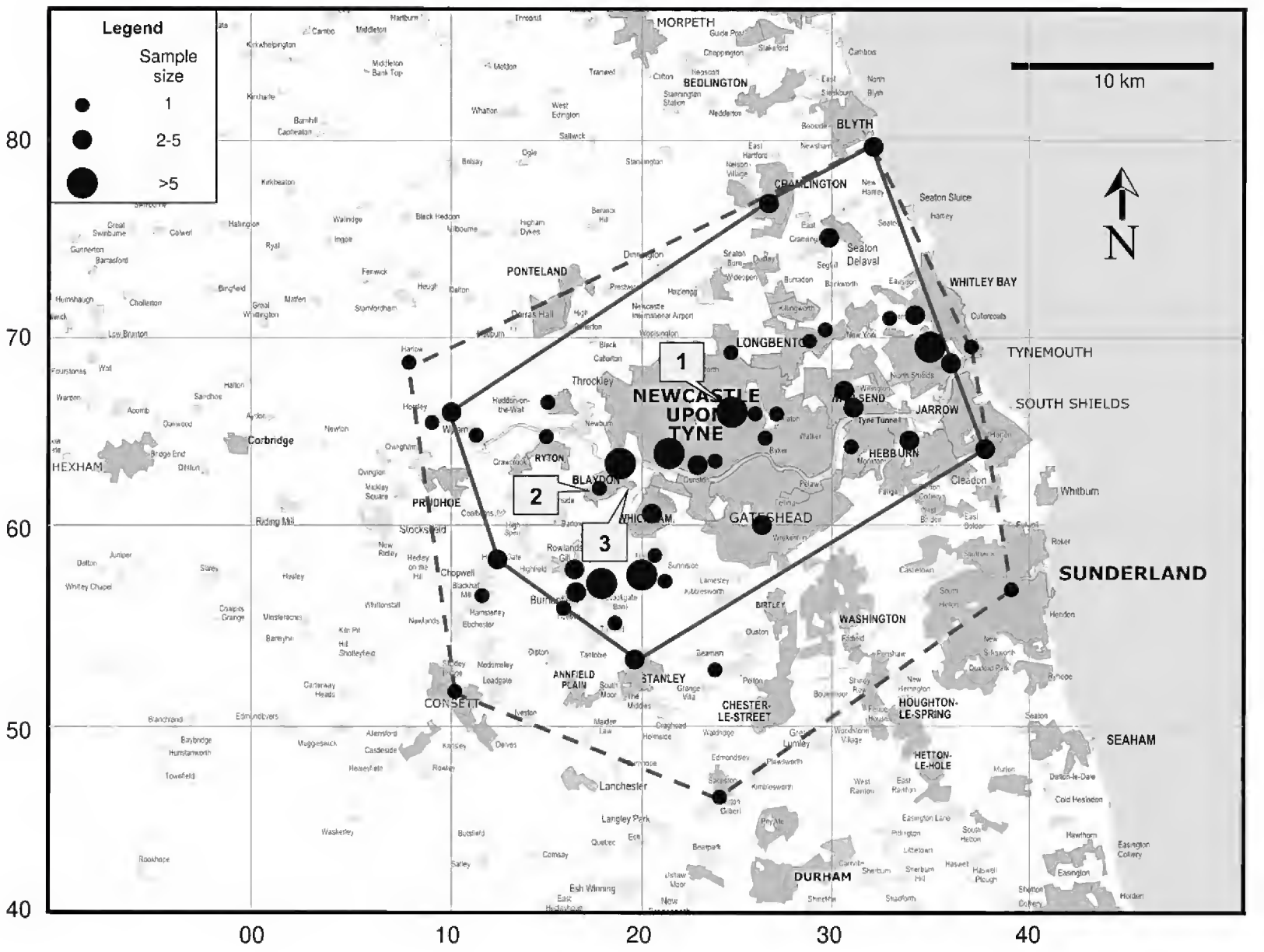

Figure 4. Distributions of *T. atrica* in the area around Newcastle-upon-Tyne. Sample size is indicated by symbol size. The dashed-line polygon joins locations with at least one *T. atrica* record, whereas the solid-line polygon joins locations with two or more *T. atrica* records (see text). Number labels refer to historical records of the *Tegenaria atrica* group: 1 and 2, Hull (1896); 2 and 3, Bagnell & Turner (1913), 1, Parker (1959) – see text. Marginal numbers are hectad grid squares within 100 km square NZ of the National Grid. Map © Crown Copyright/database right 2014. An Ordnance Survey/EDINA supplied service. Reproduced, with permission, from Oxford & Smith (2014).

A convex polygon drawn round the outermost locations suggests that the species is present over some 710 km^2 (Figure 4). However, many of these peripheral sites were represented by single specimens, which may or may not represent viable local populations. If one argues that two specimens are more likely to indicate an established population, the convex polygon linking such locations indicates that viable spider populations may extend over an area of some 400 km^2 (Figure 4). These area estimates are necessarily crude and depend, amongst other things, on multiple specimens being taken from any one location. Although this was the aspiration for the surveys we ourselves conducted, it wasn't always possible. Nevertheless, it is clear that a very large population of *T. atrica* exists in an extensive area in and around the city of Newcastle upon Tyne.

It is worth speculating about the origin of this population and how *T. atrica* interacts with the other two species. As already discussed, before the rapid spread of *T. saeva* and *T. gigantea* in the middle of the 20th century, there were few records of large house spiders in the north, but they were not totally absent. In the present context, Hull (1896) recorded a mature male *Tegenaria atrica*[2] from Jesmond, Newcastle upon Tyne, in 1887 (label 1 in Figure 4) and an immature specimen from Winlaton (undated) (2 in Figure 4). Bagnell & Turner (1913) referred to an immature specimen from Winlaton (probably the same as noted by Hull), and two immature spiders taken from Axwell Park in 1910 (3 in Figure 4). Whether some or all of these specimens represent established populations or merely separate, isolated importations of a *T. atrica* group species is not known, but the geographically adjacent Winlaton and Axwell specimens could well indicate establishment (Oxford 2009). Certainly a female, present-day *T. atrica* was reported from a school in Jesmond in 1949 (label 1 in Figure 4, Parker, 1959; see also Oxford & Smith, 2014). It seems likely therefore that *T. atrica* may have been established in this region at least by the end of the 19th century.

The original introduction of *T. atrica* must have been a chance event, with the inoculum coming most likely from the Republic of Ireland or continental Europe. Newcastle upon Tyne has a long history of importing timber from the Baltic ports, particularly in the mid- to late-1800s (Milne 2006: 144), and this could have provided a possible colonisation route (Oxford & Smith, 2014). That *T. atrica* survived and flourished was possibly contingent on the fact that no other large house spider species were present in the area at the time. Once established, the *T. atrica* population could act as a source for additional chance colonisation events further afield. One possible example of this might be the 1996 discovery by Ian Dawson of a mature male *T. atrica* in a holiday cottage at Low Newton-by-the-Sea, some 59 km north of Newcastle upon Tyne (Oxford & Smith, 2014).

It seems highly likely that a large population of *T. atrica* was well-established in the Newcastle upon Tyne area by the mid-20th century, when the other two species of the *T. atrica* group expanded their ranges northwards. Deducing ecological processes from current patterns of species distributions is not always easy (Warren *et al*., 2014). However, the distributions of *T. atrica* and combined *T. saeva*/*T. gigantea* (Figure 3) seem to suggest that the latter may have been repelled by the presence of an incumbent species, and spread around the *T. atrica* core during their northward expansion. In other words, there seems to be a degree of interspecific competition between *T. atrica* and *T. saeva*/*T. gigantea* although the mechanism(s) underlying possible competitive interactions are unclear.

Although we know more about the Newcastle upon Tyne population of *T. atrica* than any other, the species may also have established in other parts of Britain. For example, several specimens have been received from the Dundee/Perth area of Scotland (Oxford & Smith, 2014). Jackson (1906) reported a population of large house spider at Southport, Lancashire ". . . where the spider radiates from the Botanic gardens, in which place alone it is abundant". Bristowe (1939: 47) and Compton (1950: 54-55) refer to this Southport species as *T. larva* (the present-day *T. atrica*). The Botanic gardens have now gone and it is unknown whether a population of *T. atrica* still persists in

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[2] Note that at the time *T. atrica* referred to *T. saeva* or *T. gigantea*, not then recognized as separate species; *T. larva* was the name then used for what is now *T. atrica* (Oxford & Smith, 2014). Hull's mature male, supposedly lodged in the collection of the Great North Museum: Hancock, could not be located for positive identification.

that location. The past initiation of viable *T. atrica* populations in the Newcastle upon Tyne and Southport areas is intriguing given the apparent failure to establish of more recent imports (Spider Recording Scheme, 2016). One obvious factor is that, at the time these *T. atrica* populations were founded, *T. saeva* and *T. gigantea* were absent. This again might suggest interspecific interactions such that the species first established is able to resist new arrivals – so called priority effects (Oxford & Smith, 2014). A similar process might also occur at the borders of the *T. saeva* and *T. gigantea* distributions in Wales and central and southern England. Finally, it is worth remembering that the Newcastle upon Tyne population of *T. atrica* was only recognized as being of interest because, by chance, the area was colonised by a species that was otherwise rare in Britain – yet another 'roll of the dice'.

Conclusions

I hope this brief overview has shown that large house spiders in the *Tegenaria atrica* group are not without both ecological and evolutionary interest. As mentioned throughout, chance seems to have played a significant part in determining species distributions at a number of scales. The major east–west split of *T. saeva* and *T. gigantea* across Wales and most of England (Plate 1, centre pages) was most probably a result of chance, human–mediated imports of the two species after the last glaciation. The rapid expansion of both species northwards, starting about half a century ago, essentially obliterated this east–west divide in northern England and Scotland (Plate 1) and provided further, local, examples of founder effects – villages with just one or the other species (Oxford & Smith, 1987). The early species inoculums in northern England and Scotland were also chance events, both in their locations and the species concerned.

In the present case, ecological interactions can only be inferred from species distribution patterns. As pointed out, this can be a problematic task but the patterns seem to be relatively clear and there is also temporal information to aid their interpretation. The population of *T. atrica* around Newcastle upon Tyne was established long before *T. saeva* and *T. gigantea* pushed northwards and seemed able, to some extent, to repel ingression by the new arrivals (Figure 3). Only future monitoring will reveal whether this apparent priority advantage shown by *T. atrica* is ephemeral or not. The reverse situation, where *T. atrica* is prevented from establishing by the presence of the other species, is suggested by the fact that at least two *T. atrica* populations were founded in the north of England (Newcastle upon Tyne and Southport) in the absence of *T. saeva* or *T. gigantea*, whereas contemporary and continuing imports of *T. atrica* further south apparently fail to survive. These situations, if interpreted correctly, are interesting in that competition between spider species has only rarely been detected in the wild (Wise, 1993).

One consequence of the northern expansion and concomitant homogenisation of *T. saeva* and *T. gigantea* distributions was that the opportunity for sexual interactions between species was enhanced. Although the mechanical barriers preventing interspecific hybridisation are effective, they are occasionally breached (Oxford & Croucher, 2014). The F_1 offspring are perfectly viable and fertile and can readily backcross to both parents and cross within themselves. This process will produce a positive feedback with introgression gathering pace as greater numbers of individuals have more compatible genitalia. The result is that both species in Yorkshire, at least, have to some extent converged in morphology such that they are more similar to one another than they are in the allopatric zones further south (Croucher *et al*., 2007). If this process of 'ever closer union' continues it seems likely that these two species will, in the north, collapse into a single entity with genital characteristics intermediate between those of the two parent species. A growing number of examples of this phenomenon have come to light over the last decade or so

(Bettles *et al*., 2005; Taylor *et al*., 2005; Seehausen *et al*., 2008; Webb *et al*., 2011; Ruskey & Taylor, 2016). Hybridisation is a well-recognized mechanism which can lead to the blurring of species boundaries and, potentially, to a loss of biodiversity. Future sampling coupled with analysis of both morphometric and molecular markers will provide information on the trajectory and rate of change of species-merger in northern England.

Acknowledgements

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Field Note: Nacreous clouds visible from northern England

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On the morning of Tuesday 2 February 2016, rare nacreous clouds could be seen in northern parts of the UK. I took photographs of the phenomenon at approximately 07:30 from our garden in Hessle, VC61 (see front cover).

Nacreous clouds are wave clouds. Their sheet-like forms slowly undulate and stretch as the waves evolve. The clouds can also be associated with very high surface winds which may indicate the presence of, or induce, winds and waves in the stratosphere. These rare clouds, sometimes called mother-of-pearl clouds, are mostly visible within two hours after sunset or before dawn. They are filmy sheets slowly curling and uncurling, stretching and contracting in the semi-dark sky. They need the very frigid regions of the lower stratosphere, 15-25km (9 - 16 miles) high and well above tropospheric clouds. They are so bright after sunset and before dawn because at those heights they are still sunlit (Atmospheric Optics n.d.).

The clouds form at temperatures of around -85°C, colder than average lower stratophere temperatures, and are comprised of ice particles ~10µm across. The clouds must be composed of similar sized crystals to produce the characteristic bright iridescent colours by diffraction and interference.

Nacreous clouds are seen mostly during winter at high latitudes in areas such as Scandinavia, Iceland, Alaska and Northern Canada. They can be less rare downwind of mountain ranges. Elsewhere their appearance is often associated with severe tropospheric winds and storms. The recent storm 'Henry', which hit the west coast of the UK, is thought to be the likely cause of this occurrence being seen in our region.

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The BSBI Atlas 2020 Project in VC63 (S.W. Yorkshire): A progress report

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Introduction

During the 1990s a number of botanists in our area were involved in collecting data for the BSBI (Botanical Society of the British Isles) Atlas 2000 Project. The aim of this Project was to record botanical data throughout Great Britain and Ireland at a hectad (10km x 10km) level. This Project started in 1987 and was the first major recording exercise at a national scale since the famous *Atlas of the British Flora* produced by Franklyn Perring and Max Walters in 1962.

Why was this national scale of BSBI recording decided on and implemented in the first place? Primarily, in the mid-20th Century, to answer the question: what have we got nationally in terms of wild flower diversity, abundance and frequency? Until the 1962 Atlas appeared, with the preparatory work leading up to its publication, there had been no previous coherent countrywide coverage of plant distribution, so this was a major step forward. This makes the *raison d'être* of the Atlas 2000 and the current Atlas 2020 Projects perfectly clear. The 40 year gap between 1962 and 2002 highlighted the considerable changes in plant distribution and frequency which had taken place, not least because of a greater intensity and comprehensiveness in recording but also because a raft of new species – predominantly aliens – had arrived, or were being more easily recognised and identified in the intervening period and, along with increases in abundance of many already established aliens, became a significant factor in altering or affecting the vegetation structure of many habitats, such as wetlands. So, Atlas 2020 will reveal, in a shorter timescale, the respective changes in our national flora which have taken place since 2000. All this information, historical and current, is stored in the BSBI's main database and, apart from being a monitor on the health and well-being of our plant life, is an essential reference for everyone interested in the nation's botany at a national or regional level, be they academic, professional ecologist/land manager or amateur botanist/wildlife enthusiast.

Recording for the Atlas 2000 Project ended in 1999 and three years later a new comprehensive volume appeared, giving details of the hectad coverage of Great Britain and Ireland shown on dot distribution maps, with one dot per hectad. This was the *New Atlas of the British and Irish Flora* edited by Chris Preston, David Pearman and Trevor Dines and published by Oxford University Press for the BSBI. The *New Atlas* contained distribution maps for 2,412 of the commoner plants, with accompanying captions by a team of writers drawn from the BSBI membership. The volume also came with a CD which provided similar distribution maps and captions for a further 1,699 rarer plants, making 4,111 taxa covered in total.

The BSBI Atlas 2020 Project

After publication of the *New Atlas,* the momentum achieved during the Atlas 2000 Project was carried forward into the new millennium. Initially, the remit was to continue collecting data at a hectad level, based on a ten year time scale – i.e., 2001 – 2010, 2011 – 2020 etc. Subsequent guidance from the BSBI altered and revised this remit to record at a tetrad (2km x 2km) level within each hectad, with the objective being the publication of a new Atlas in 2020, detailing the observable changes which had taken place since Atlas 2000. The new, finer recording unit of tetrads meant that there was a certain amount of flexibility in recording throughout each hectad. The BSBI guidance has suggested that a minimum of five tetrads is systematically recorded within each hectad, targeting the five most species-rich and productive tetrads; further recording within each hectad can be at the tetrad or the monad (1km x 1km) scale (the latter converted into the relevant tetrads) and thus supplement the coverage of the five basic tetrads. In other words, the recording coverage is left very much to the discretion of the VC recorder(s) and their available resources (teams of helpers for active fieldwork coverage, literature record sources, etc., etc.).

Vice County 63 (South-West Yorkshire) is a moderately sized vice-county which extends from Gargrave near Skipton in the north-west to Blacktoft Sands, the RSPB Reserve on the south bank of the Humber estuary in the east. The northern boundary of the VC is the Leeds-Liverpool Canal, continuing eastwards to the Aire and Calder Navigation Canal and eventually joining the River Ouse near Goole; the southern boundary encompasses the border of Sheffield District with the administrative county of Derbyshire. The area ranges from the Pennine moorland plateau in the west, through the central Coal Measures woodland and mixed agricultural/industrial belt to the varied Magnesian Limestone country and the famous lowland peat habitats of Thorne and Hatfield Moors in the east, the altitude ranging from 2000 feet on the Pennine tops down to sea level east of Doncaster.

The total number of tetrads and part tetrads in VC63 is 970. In dealing with a large number like this, considerable benefit has been gained from having fairly recently produced *The South Yorkshire Plant Atlas,* which covers around half the area of the vice county. From the master 1km square paper copies of records which had been retained after the field recording exercise was completed, it was a reasonably easy, if somewhat time consuming, job to extract all the post-2000 records for each 1km square and convert these into tetrad totals. This produced a virtual blanket cover of recorded tetrads throughout South Yorkshire. So far so good, as far as the South Yorkshire element of the VC was concerned. The West Yorkshire section, however, from the Leeds-Liverpool Canal northern boundary down to the border with South Yorkshire, was a different matter. Very little and only sporadic recording had been undertaken here since the publication of *The West Yorkshire Plant Atlas* in 1994. Indeed, much of the time from 2001 to 2010 had been occupied with field work and other tasks in connection with *The South Yorkshire Plant Atlas*. The sum total of our recorded data was, therefore, very poor and comprised largely of visits to nature reserves and other wildlife sites by Bradford Botany Group, plus occasional lists sent in by individual botanists.

In recent times, however, three very significant batches of West Yorkshire records have been received and we owe a tremendous debt of gratitude, firstly, to Robert Masheder and Laura Price at West Yorkshire Ecology, who allowed us access to their entire post-2000 botanical

data base. Secondly, Jill Lucas loaned all her Kirklees 1km square records to GTDW and these were transcribed during 2015. Thirdly, David Broughton has for a few years been regularly sending a stream of information from his home area, principally around Rothwell, Oulton and Woodlesford. Many thanks indeed, Jill and David. All these data have filled in many tetrads in the West Yorkshire part of the 'jigsaw' and swelled our overall totals appreciably. When all the West Yorkshire Ecology records had been computerised, together with the above South Yorkshire data plus current fieldwork, the sum total of records for the vice-county had reached 106,428 items by December 2015. We give below a breakdown in five categories, showing the number of tetrads containing 0 – 400+ records, together with a map (Fig 1) showing the spatial distribution of records across the vice-county and (more importantly), highlighting the blank or under-recorded areas.

Tetrads with no records (so far)	209
Tetrads with 1 – 100 records	282
Tetrads with 101 – 250 records	395
Tetrads with 251 – 400 records	82
Tetrads with over 400 records	2
Total	970

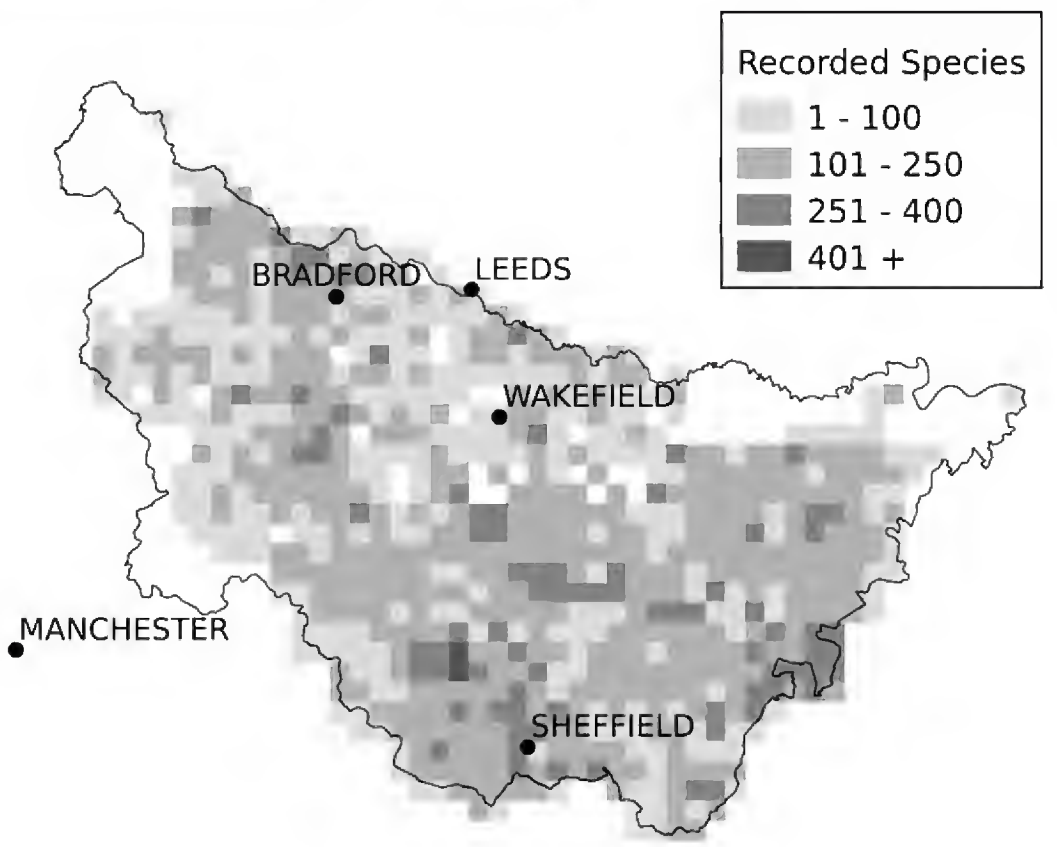

Figure 1. VC63 Tetrad Map of Atlas 2020 Coverage.

The two most productive tetrads, with 449 and 429 taxa recorded respectively, are SK29X and SK29Y, encompassing the Lower, Middle and Upper Ewden valley area in Sheffield District, centred on Ewden Beck and More Hall Reservoir, south of Bolsterstone. This region has been systematically worked over several years by John and Valerie Middleton, who contributed significantly to *The South Yorkshire Plant Atlas* coverage and are our specialists in upland/moorland vegetation. These totals are a terrific achievement!

Eight further tetrads have in excess of 350 taxa recorded and these will be reviewed briefly. The third highest total, 397 species, is SK29T, adjacent to the two in the Ewden valley and, again, John and Valerie Middleton have amassed this stunning total. Fourth, with 384 taxa, is SE32P, covering the Rothwell general area south of Leeds and reflecting David Broughton's assiduous and detailed recording. 377 taxa have been recorded in SE12G, the Cromwell Bottom tetrad near Elland – this large total being the cumulative results of several trips to the area by Bradford Botany Group. The Sowerby Bridge/Northdean Wood/Norland Moor tetrad, SE02R, has a total of 374 taxa, reflecting a diversity of species in a variety of habitats. SE13S encompasses the Boar's Well Urban Nature Reserve and the Peel Park area of Bradford and here the total is 373 species, largely recorded by Bradford Botany Group on several visits. For the next tetrad, SK29S, we return to the southern sections of the Ewden valley in Sheffield District where, again, John and Valerie Middleton have amassed 372 taxa. The seventh tetrad in our sequence is in the south-east corner of the vice county, SK69M, where the assiduous recording of Graeme Coles for *The South Yorkshire Plant Atlas* (acknowledged in that volume), together with visits by Bradford Botany Group to the Mosaic Reserve at Austerfield, has reached a score of 367 taxa. The final 350+ tetrad is in Central Sheffield, SK38U covering the Burngreave, Pitsmoor and Attercliffe districts, where detailed surveys by Sheffield Wildlife Trust have achieved a total of 352 species.

The Atlas 2020 Project, in conjunction with the ongoing VC63 Red Data Plant Project, has recorded a number of regionally scarce taxa, a selection of which is given in the table below :

Taxon	Location
X Agropogon lutosus Perennial Beard-grass	Disused mill site, Fairweather Green, Bradford
Andromeda polifolia Bog-rosemary	Thorne & Hatfield Moors
Arctostaphylos uva-ursi Bearberry	Pennine Uplands, W of Sheffield & Barnsley
Astragalus danicus Purple Milk-vetch	Brockadale
Baldellia ranunculoides Lesser Water-plantain	Potteric Carr
Carex digitata Fingered Sedge	Anston Stones Wood & Roche Abbey
Carex ericetorum Rare Spring-sedge	Brockadale
Carex vulpina True Fox-sedge	Fishlake area
Cirsium dissectum Meadow Thistle	Maltby Low Common
Cladium mariscus Great Fen-sedge	Shirley Pool, Askern
Epipactis dunensis Dune Helleborine	Thorne Moors
Epipactis phyllanthes Green-flowered Helleborine	Cusworth Park
Gnaphalium sylvaticum Heath Cudweed	Blaxton Common
Himantoglossum hircinum Lizard Orchid	Doncaster District
Hypopitys monotropa Yellow Bird's-nest	Cromwell Bottom
Lathyrus palustris Marsh Pea	Thorne Moors
Myosotis x bollandica	Ovenden Moor, nr. Halifax
Parnassia palustris Grass-of-Parnassus	Maltby Low Common
Platanthera chlorantha Greater Butterfly-orchid	Maltby Far Common
Potamogeton coloratus Fen Pondweed	Potteric Carr
Pyrola rotundifolia ssp. rotundifolia	Cromwell Bottom
Sonchus palustris Marsh Sow-thistle	Blacktoft Sands

Spiranthes spiralis Autumn Lady's-tresses	Marr Hills & Holes, Doncaster District
Teesdalia nudicaulis Shepherd's Cress	Mosaic Reserve, Austerfield
Ulex minor Dwarf Gorse	Doncaster racecourse area
Viscum album Mistletoe	Sandbeck Park

As can be seen from the tetrad distribution map (Fig 1) above, there are several areas where coverage is sparse or non-existent at present. These include the extreme north-west and south-west of the vice county, covering the regions west of Keighley to the Lancashire border and also those upland fringes adjoining the Lancashire border near Oldham and Milnrow. Elsewhere, the extreme north-eastern border with VC64, south of the Aire-Calder Navigation Canal from Womersley and Cridling Stubbs to Adlingfleet and the general Goole area is also very poorly recorded, so all these become target areas for attention in the remaining four field seasons (2016 – 2019) of the Project. Louise Hill is seeking to organise an official Data sharing agreement between BSBI, VC63 Recorders and Doncaster Local Record Centre. This initiative could advantageously be pursued with other LRCs in South and West Yorkshire.

Finally, I wish to publicly announce that, as of Dec 31st 2015, I have stepped down as BSBI VC63 Honorary Recorder after 23 years tenure, and my successors are Louise Hill, covering the South Yorkshire area of the VC, and Kay McDowell, covering the West Yorkshire section. Louise and Kay will be organising field meetings to target un- or under-recorded areas and I urge you to give them your support and participate in this very worthwhile exercise.

In closing, I would just like to sincerely thank all the good friends who have helped and supported me on field trips, by sending in their own data, by furnishing literature records or by simply making the job of a VC Recorder that much easier for over two decades.

Acknowledgements

Thanks have been given throughout the above text to various people and organisations who have given significant help in the current Atlas 2020 Project - Robert Masheder and Laura Price at West Yorkshire Ecology; Jill Lucas; David Broughton; John & Valerie Middleton; Graeme Coles; Bradford Botany Group; Sheffield Wildlife Trust and, by implication, the entire *South Yorkshire Plant Atlas* recording team, mentioned in that publication. I wish, on behalf of Louise and Kay, to reiterate our thanks to you all. I would also like to acknowledge the very considerable debt I owe to Tim Prosser, the VC63 Atlas 2020 Data Manager, who has performed a fantastic and herculean task in processing the 100,000+ records that have been flowing regularly in his direction over the past year or more. Very many thanks, Tim. Finally, my wife, June, has put up with tables and desks littered with paperwork, species cards, maps and endless other paraphernalia since we got together nearly thirty years ago, - and we are still together.... She deserves and receives my heartfelt thanks.

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Notes on the Diptera of a Yorkshire lowland heath

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The Calley Heath (often called Cali Heath) reserve of the Yorkshire Wildlife Trust is a roughly triangular area of sandy lowland heath some 27 acres in extent (Plate 2), adjoining the A1079 Hull-York road about two miles west of Barmby Moor (entrance: SE751496). The site was originally part of c.75 acres which escaped enclosure, being held in Trust for the benefit of the poor of the parish of Barmby-on-the-Moor (as it was then known). After the Second World War the land was sold by the Trustees in two lots, the one nearest to Barmby Moor being taken into agricultural management. 15 of the remaining plot of 27 acres were cultivated for varying lengths of time but, as far as is known, c.12 acres at the extreme western end remained as unimproved heathland. This small relict grass-heathland is a well-known locality for plants once typical of such places but now scarce in lowland Yorkshire, one example being Shepherd's Cress *Teesdalia nudicaulis* (Crackles, 1990).

This site was gifted to the Yorkshire Wildlife Trust in 2005 and since that time much work has been undertaken by the Trust to help improve habitats. In particular, two former fields which were at one time under cultivation have been sown with acid-grassland seed mix; some scrub has been removed, and grazing sheep and cattle are on site at various times. There is a small (mostly Alder *Alnus glutinosa*) woodland at the west end and there are mature Alders bordering Black Dyke, which crosses the reserve, with birches and oaks scattered about the site; there are several damp hollows with rushes.

In the following account nomenclature follows Chandler (1998) with up-dates, and national threat statuses follow Falk (1991) and Falk & Crossley (2005) as appropriate.

The site was first visited by the author in 1997 when it was still in private hands, in order to record flies. For several years thereafter, until it came under the management of the YWT, collecting was confined to the twelve-acre relict heathland. Discoveries that first year included two 'Red Data' insects: the dance-flies *Hilara gallica* (Vulnerable = RDB2) and *Empis prodromus* (Lower Risk – Near Threatened = RDB3). These, plus a selection of typical heathland flies, alerted the recorder to the potential value of this small area for Diptera (and possibly other insect Orders, too). This was reinforced the following year when specimens of the 'long-footed fly' *Dolichopus migrans* (RDB3) were swept from long grass.

In more recent years the entire 27 acres site has been worked for Diptera by the author and by Ian Andrews. The list now numbers 479 species representing 44 families. Details are entered on the data base of the Yorkshire Wildlife Trust as well as in the records of the Yorkshire Naturalists' Union.

Recording was initially concentrated on those groups in which the author is interested as YNU Recorder (Tipuloidea and Empidoidea), with others being recorded more casually; some of

the latter were passed to J.D.Coldwell for identification. In recent years Ian Andrews has been recording a wider range of families and the species-list has been considerably enlarged as a result of his efforts. All the records in this account are those made by the author, except where indicated otherwise.

In addition to the three 'Red Data' flies found in the early years of these studies, several Nationally Notable ones have been recorded, those noted in this account being the crane-flies *Diogma glabrata* and *Limonia trivittata*; the robber-fly *Lasiopogon cinctus* (Plate 2); the dance-flies *Platypalpus articulatoides* and *Hilara scrobulatica*.

Diogma glabrata is widespread but very local in Yorkshire, occurring mainly in the north of the County; the only other VC61 record is from Millington Wood in 2007. Two more Cali Heath crane-flies are worthy of mention: *Limnophila schranki* was found in 2014 by Ian Andrews; the first record for East Yorkshire was from Holme on Spalding Moor in 1924 and then Barmby Moor in 1929. The capture of the latter is attributed to Dr W.J.Fordham (det.C.A.Cheetham) and in recent years this fly has been found in two other VC61 localities (Howl Beck Wood and Norton Ings). Elsewhere in Yorkshire it is widely distributed, often occurring in wet woodland. The Fordham 'Barmby Moor' record is of interest, as will be discussed later. The second crane-fly is *Limonia dilutior* which is associated with Broom *Cytisus scoparius*, the first Yorkshire record being from Spurn in 1928, and this remained the only locality until 1980 when there was a report from Barnard Castle (VC65). Thereafter it has been reported from seven widely scattered Yorkshire sites, so this remains a scarce Yorkshire fly. At Cali Heath, which is still the only modern recorded site in East Yorkshire, specimens were found in the vicinity of Broom in 1997 and in 1998. At that time there was much Broom on the original 'heath' areas, together with Gorse *Ulex europaeus*, but the majority of both plants was old and overgrown and most were cleared with other encroaching scrub as part of initial management. It remains to be seen if this fly has survived at the site.

Two stiletto-flies (Therevidae) have been recorded at Cali Heath, by far the most usual being the common and widespread *Thereva nobilitata*. However, single examples of *T. bipunctata* have been found on four occasions between 2007 and 2015. This is principally an insect of coastal dunes and it was reported from Spurn in 1919; it is unusual inland but it occurs, for example, in the Brecklands of Suffolk and Norfolk. In Yorkshire there is a 1927 record for Allerthorpe, which is only about two km from Cali Heath.

A striking component of the dipterous fauna of Cali Heath are the 'robber-flies', or 'assassin-flies' (Asilidae), so-called because of their predatory life-style. Mostly they are slender-bodied and comparatively large insects of warm southern grasslands, and ten of the fifteen species recorded in Yorkshire (including one which is probably extinct) have been found at Cali Heath. This variety at one small site is an indication of the quality of the habitat. The scarcest of these ten is the Nationally Notable *Lasiopogon cinctus*; this is a spring-flying asilid mainly of southern heathlands, with additional Yorkshire records from Allerthorpe and Strensall Commons and Hatfield Moor, and an old one from Pilmoor (VC62).

The 'dance-flies' (Hybotidae and Empididae) recorded for the site contain two 'Red Data' and two 'Nationally Notable' ones. Of the hybotids, the large genus *Platypalpus*, comprising 87 British species, is represented at Cali Heath by 23, most of which are common and widespread, except *P. articulatoides*; this is scarce in Yorkshire, with a concentration of records from the lowlands of VC61 and with no obvious habitat preference. *Platypalpus* species are tiny predatory flies, usually black and often with greatly enlarged middle femora. Equally small is the Red Data *Empis prodromus,* which was first recorded in Yorkshire at Allerthorpe Common and North Cliffe Wood in 1989. It has been found regularly at Cali Heath since 1997 and was found at North Cave Wetlands in 2007. Thus all Yorkshire records of this fly, which appears to have a very restricted distribution nationally, are from YWT reserves in lowland East Yorkshire.

Hilara is a very large empidid genus with 70 British species, of which twenty have been recorded from Cali Heath to date. A single female of *Hilara scrobulatica* was found in May 1998 and identified by Mr J.H.Cole; this is the only Yorkshire record for a fly which is mostly reported from Scotland.

Hilara species in general are small black or blackish flies, many of which are given to courtship swarming, particularly over water, a characteristic shared by other empidids and which gives rise to the popular name of 'dance-flies'. Many *Hilara* males have enlarged front tarsal segments which contain silk glands. The silk is used to wrap small prey or other objects which are presented to females prior to mating. *H. gallica,* measuring c.4.5mm., differs from the majority of *Hilaras* in being uniformly light greyish and with yellowish legs, and is thus readily recognisable in the field by experienced dipterists. In June 1926 a single male was found at Allerthorpe by Dr Fordham who, being unable to name it, submitted it to J.E.Collin of Newmarket. Mr Collin was a leading British dipterist for much of the first half of the last century and he identified the specimen as new to Britain. Dr Fordham gave the specimen to Collin and it is still present, intact, in the Verrall/Collin Collection of Diptera at the University Museum of Natural History in Oxford, where I examined it some years ago. Until 1997 this remained the only known British example and, when the first draft of Falk & Crossley (2005) was written in 1994, it was designated as 'probably extinct'. However, on 8 June 1997, a single male was swept from tree foliage at Cali Heath, followed by a single female on 4 July. Many examples have been found in subsequent years and specimens have been donated to major Museums (University Museum of Natural History, Oxford; Natural History Museum, London; National Museum of Wales, Cardiff; National Museums, Liverpool). Specimens are usually swept from the foliage of various trees and over the years the search has been extended beyond the confines of the Reserve. It has been gratifying to find examples on roadside trees along Sands Lane, which lies c.300m. west of Cali Heath, and Feoffee Common Lane c.1km to the east. In addition, examples of both sexes were found on trees bordering the west path at North Cliffe Wood YWT Reserve in the summer of 2006. Possibly the most gratifying discovery of all was made by Ian Andrews, who found a single male at Allerthorpe Common in June 2012, thus confirming the original Fordham site of 86 years earlier. There has subsequently been a report from a sandy location in the vicinity of Scunthorpe with no further details and, so far as current knowledge goes, the area in and around Cali Heath is the major British location for this nationally 'Vulnerable' (RDB2) fly.

The spring of 1998 produced another quite unexpected discovery, the dolichopodid fly *Dolichopus migrans,* a single male being captured on 25 May, and both male and females a month later. Further examples were found in 2007 and in subsequent years. It has been particularly gratifying to discover numerous examples in one of the former cultivated fields which has been subject to re-seeding as part of the habitat restoration programme at Cali Heath. *D.migrans* was, until fairly recently, thought to be restricted to dry grassland on sandy soils in the Brecklands, but there have been recent reports from sites in North Lincolnshire, in addition to a 1987 report from Risby Warren in the same area. There has also been a 2012 report of a single example from dry grassland at Towthorpe near Market Weighton. Whether this was a 'one-off' wind-blown stray specimen or a member of an established population remains to be seen; the site is not the typical sandy habitat usually associated with this insect. Until shown otherwise, Cali Heath is its principal locality in the North of England.

Medetera is a large dolichopodid genus of small greyish flies, most of which run around on tree trunks in search of prey; the larvae of some are known to predate the larvae of bark beetles. Although they are distinctive flies they are difficult to capture, and are often difficult to identify, with the consequence that this tends to be a neglected genus. Six species have been recorded at Cali Heath, of which the scarcest is *M. micacea*, a single male having been found in 1997. This is scarce in Yorkshire, with only six widely scattered records. In East Yorkshire it has been reported from Thixendale and Water Dale in addition to Cali Heath.

The mainly tropical dolichopodid genus *Sciapus* is represented in Yorkshire by seven species, of which three have been recorded at Cali Heath: *S. contristans*, *S. platypterus* and *S. wiedemanni*. *S. contristans* was first reported in Yorkshire by Chris Cheetham from Allerthorpe in June 1925. The specimen (a male) is in the dolichopodid collection housed at Leeds City Museum, based on Cheetham's own collection, and the specimen was originally identified as *S. maritimus* in error (Crossley, 1992). The Leeds collection also contains two male *S. contristans* from Alwoodley collected by Mrs E.C.Broadhead in 1979, and again originally mis-identified as *S. maritimus*. Until the comprehensive revision of the *S. contristans* species-group by Meuffels & Grooteart (1990), there was much confusion between the two and, given the available literature prior to that time, errors were inevitable. A single male *S. contristans* was reported by J.D.Coldwell from Houghton Common, Barnsley, in 1991. All further Yorkshire records for this fly are from Cali Heath, where single examples have been found on four occasions between 1998 and 2009, all of them being swept from tree foliage.

Mention was made earlier of the 1929 Fordham record of *Limnophila schranki* from 'Barmby Moor'. A prominent figure in British entomology, Dr Fordham lived in retirement at Barmby Moor during the 1920s-30s, dying there in 1941 after many years as an invalid; he was interred in the village churchyard on Christmas Eve. From his many records, not only of Diptera but also of Hymenoptera, he seems to have been a regular visitor to Allerthorpe Common and the grounds of nearby Frog Hall. In addition, there are many records which simply say 'Barmby Moor' with no indication of the precise location. It is tempting to speculate that he knew and worked what we now call 'Cali Heath', for it is part of the Parish of Barmby Moor and in his time it would have been easy of access and much more extensive than it is today. Could it possibly have been his 'Barmby Moor' site? We shall probably never

know, but if it was it is strange that he overlooked *Hilara gallica* which he had found at Allerthorpe in 1927, and he did not report any further specimens at the original site nor anywhere else. However, Cali Heath may have been very different then; Allerthorpe Common certainly was, and it is likely that a visitor from 80 years ago would not be able to recognise either today. Perhaps *H.gallica* was genuinely much more rare in the area at that time.

Acknowledgements
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Calamoncosis apistylina (Diptera: Chloropidae) and other interesting flies collected at Scout Dike, South Yorkshire

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For the past two years I have recorded Diptera on a handful of occasions in late summer, mainly in August 2014 and 2015, at the southern point of Scout Dike (SE2204), a Yorkshire Water reservoir constructed in 1923 a mile or so north of Penistone, South Yorkshire.

This sheltered corner is well vegetated (Plate 3). A YNU excursion in 1994 reported large and continuous stands of Shoreweed *Littorella uniflora*, Amphibious Bistort *Persicaria amphibia* and Intermediate Water-starwort *Callitriche hamulata*, which still flourish along with Trifid Bur-marigold *Bidens tripartita*, Reed Canary-grass *Phalaris arundinacea* and various damp-

loving wild flowers, grasses, sedges and willows. The terrestrial insect fauna, however, seems to be very little known apart from a few common taxa recorded by myself on the aforementioned YNU excursion and an earlier random record of the muscid *Hydrotaea albipuncta* taken by John Armitage (identified by Peter Skidmore).

Although late summer may not generally be considered a peak period for the recording of Diptera, sweep-netting at this site invariably results in vast numbers of flies, particularly the acalyptratae. It is this somewhat under-worked group that has received most attention, at least in the two years under review.

The most noteworthy ones are briefly discussed below.

CHIRONOMIDAE

Procladius signatus (Zetterstedt). A male was found on 13 Aug 2015. This non-biting midge is a fairly recent addition to the British fauna (Pinder, 1978) and is new to Yorkshire. It is widespread in Ireland (Murray *et.al.*, 2013).

TEPHRITIDAE

Dioxyna bidentis (Robineau-Desvoidy). Occurs in good numbers at Scout Dike, as a consequence of the abundance of Trifid Bur-marigold, its main foodplant. Widely distributed though somewhat local in England.

SEPSIDAE

Themira germanica Duda. A single male of this uncommon fly was obtained 4 Aug 2014. This is mainly Scottish, little known elsewhere in the UK although it has previously been recorded for Yorkshire. Typically found on waterside vegetation, its larvae presumably developing in some sort of putrid medium.

Saltella sphondylii (Schrank). A male was swept 7 Aug 2014 and a female 11 Aug 2015. A pasture species whose larvae feed on cow dung (cattle are often present in a field adjacent to the reservoir), this is a rather local sepsid found mainly in the south-east of the UK, possibly overlooked in northern England and Scotland.

ACARTOPHTHALMIDAE

Acartophthalmus bicolor Oldenberg. Only three days after being added to the Yorkshire list on the basis of two males from Stainborough Castle Gardens, a further male was found at Scout Dike on 1 Aug 2015, an unusual locality for an insect normally associated with fungi and other rotting organic matter in woodland.

AGROMYZIDAE

Gymnophytomyza heteroneura (Hendel). This very small agromyzid was also added to the Yorkshire list on the basis of a male from Stainborough Castle Gardens in July 2013. Another male was found at Scout Dike on 6 Aug 2015. The larvae feed on the seeds of Cleavers *Galium aparine*.

CHLOROPIDAE

Calamoncosis apistylina Duda. Arguably the prize discovery of this site, a female of this dark chloropid was taken on 11 Aug 2015. There appear to be few records of this rare fly in the

UK, whose larvae live in stems of Reed Canary-grass. Accorded RDB K status in Falk (1991).

Oscinisoma gilvipes (Loew). This is a small, infrequently-reported fly of mainly southern distribution in the UK, found in marshy situations. A female was swept on 13 Sept 2014.

Pseudopachychaeta heleocharis Nartshuk. Another small, infrequently recorded chloropid of marshy places. A female and a presumed male (only females are separable from the similar *P. approximatonervis*) were obtained on 25 Aug 2015. Larvae may feed in the inflorescences of spike-rushes.

SCIOMYZIDAE

Colobaea bifasciella (Fallén). A Notable species, this small, rather pretty marsh fly is widespread in England and Wales but very local. It is found in rich marginal vegetation around ponds and lakes where the larvae develop as internal parasitoids of aquatic snails. A female was found on 11 Aug 2015.

Colobaea punctata (Lundbeck). Another Notable fly, this has a similar status and distribution to *C. bifasciella* and shares the same lush marginal vegetation of rivers, ponds and ditches, the larvae being parasitoids of terrestrial and stranded aquatic snails. A male was swept on 23 Aug 2014 and confirmed by dissection.

Pteromicra glabricula (Fallén). A Notable marsh fly, widespread but very scarce and hardly known in Yorkshire, with similar ecological requirements to the last two. A male was recorded 5 Aug 2015.

EPHYDRIDAE

Athyroglossa glabra (Meigen). A small, black, shiny 'shore fly' with partially white legs, this is a distinctive dipteron about which little seems to be known. It has been recorded from three Yorkshire vice-counties (although this would appear to be the first for VC63) and nationally has a patchy westerly distribution. It was reared from larvae that fed on dead vertebrates (Mathis & Zatwarnicki, 1990). The Scout Dike specimen is a female, found 6 Aug 2015.

MUSCIDAE

Azelia trigonica Hennig. A single male and female were swept on 22 Aug 2014 and constituted an addition to the Yorkshire diptera fauna. Little seems to be known about its ecology and it is regarded as widespread though sparse in the UK.

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Notes on *Vertigo alpestris* and *Vertigo pusilla* in Watsonian Yorkshire

David J. Lindley

[Following a great deal of fieldwork by David Lindley this article was almost ready for publication when, very sadly, he died suddenly in July 2015. David was an outstanding field naturalist and he is greatly missed by his fellow Yorkshire conchologists. His article is based on many years of meticulous observation and recording, hence we have made only minor amendments and additions to the text in order to bring it fully up to date. These are placed in square brackets. Please address any correspondence to adrianxnorris@aol.com]

Mountain Whorl Snail *Vertigo alpestris* Alder 1838 and Wall Whorl Snail *V. pusilla* Müller 1774 are two species of minute land snail (Plate 4). They have been known to occur in Yorkshire for over 100 years and I feel that it is time that their status is looked at in more detail. One of the reasons for their being considered together is the often-held view that they usually occur in the same locality; this is not the norm in Yorkshire yet they do favour similar conditions. In order to determine their current status it is necessary to have an overview of the historical records within Watsonian Yorkshire. Both have been placed within the Yorkshire Red Data Book as 'vulnerable' (Norris, 1998). Tables 1 and 2 show brief details of the known Yorkshire sites in date order. Both are also known as fossils in Watsonian Yorkshire but records for these are not included in this article.

Mountain Whorl Snail *Vertigo alpestris*

1. Cottingley Bridge

This is the first record in Yorkshire and dates from 1887 (Booth, 1909) with numerous specimens taken from the site over a period of time. The site no longer exists, the old bridge being demolished some years ago to assist with road improvements. The area has been searched many times in recent years but this snail has not been re-found. Booth (loc.cit) gives a garden wall as the site and it may be that there is still a population extant in such a locality. There are no other records for VC63.

2. Farfield, Addingham

Whilst working on the William Nelson collection in Leeds City Museum I came across specimens from this site. They were simply labelled 'Farfield Addingham'. There was no date, which is not unusual for Nelson. They are in very good condition and were obviously collected alive, yet I can find no published reference to the site. There are two areas marked Farfield on the Ordnance Survey map of the area, Farfield House and Farfield Hall, both north of the village. I have searched suitable walls in the area of both but have not found specimens. I consider this site at Addingham to be the second record for the county as Nelson died three years prior to the discovery of the Beezley site; yet for some reason he did not publish the Addingham record, which he would have known was of great interest. I can only suppose it was found just prior to his illness.

3. Beezley Falls
This record by J.W. Taylor was published as the second for the county and the first for VC64 (Booth, loc.cit.) but I believe this to be erroneous. The locality at Beezley Falls is given as the top of a mossy wall. The falls are near the top of a steep-sided wooded valley which has walled boundaries. This record has not been re-confirmed though I have found this snail further down the valley in a similar locality (see Site 12).

4. Swilla Glen, Ingleton
This valley runs parallel to site 3 and is of a very similar nature. The exact location is not given (Taylor & Roebuck, 1885-1919) but see Site 21. There are specimens in Liverpool Museum collected by Robert Cairnes but just labelled as 'Ingleton'.

5. Apedale Beck, Castle Bolton (SE043920)
This site, recorded by Ralph Lowe in 1952, was the first site for VC65 and also the first record for the county since 1908. It is a small stretch of wall on the east side of the beck. A single specimen was found by Adrian Norris and myself on 20.10.2003.

6. Low Bolton (SE040909)
This site is under Ivy *Hedera helix* on the top of a ruined limestone wall where Mountain Whorl Snail was found on 17.09.1972 in some numbers (there are about 20 specimens in the Leeds Museum collection). It was re-found here in 2003 and again on 08.05.2006 along with Wall Whorl Snail.

7. Keld
On a mossy wall on the north bank of the River Swale just over a footbridge. The site may or may not be shaded. At an altitude of c.310m this is the second highest record for Mountain Whorl Snail in Yorkshire. During visits in August 2000 and on 17.10.2006 I was unable to re-find it. [This description of the site as the wall immediately to the north of the river suggests a grid reference of NY895010 rather than that given in Table 1].

8. Aysgarth
The top of a mossy limestone wall which has some very straggly Ivy in parts. It is on the northern boundary of a wood and is shaded in the main by Ash *Fraxinus excelsior* and Blackthorn *Prunus spinosa*. There are several Ivy-covered walls on the road close by which appear to be suitable for Mountain Whorl Snail but which have to date failed to produce specimens. It was re-found here at SE01348913 on 05.05.2006.

9. Downholme Park
Mountain Whorl Snail was first found here during a YNU meeting on 25th July 1987 by Lloyd Lloyd-Evans and Tony Wardhaugh (Lee, 1988). The site is the top of a limestone wall on the east side of the River Swale and is shaded by Ash, Sycamore *Acer pseudoplatanus* and Hazel *Corylus avellana*. There is some Ivy on the wall but Mountain Whorl Snail was not under it (A.A. Wardhaugh, pers. comm.). It was re-found here on 23.06.2006 along a stretch of c.625m of wall (SE11239952 to NZ11260008).

10. Ling Gill National Nature Reserve
At 330m this is the highest site in the county for Mountain Whorl Snail. It is found on limestone walls near the bridge at the top of the gill and on the grass banking at the top of the crags leading into this very steep-sided gill. As far as I am aware this is the only known ground habitat for it in England. There are two specimens in the Leeds Museum collection

dated 08.08.1987. Another individual was found on 09.05.2006 at SD80303.78854 when close examination revealed that the ground level site contains a totally collapsed wall which had become covered with vegetation.

11. Arncliffe

Mountain Whorl Snail is plentiful on the church boundary wall under straggly Ivy. It is also found under more robust Ivy growth on the opposite side of the river to the church and on several other garden walls around the village. Re-found in several places on 11.06.2006.

12. Beezley Valley

In 1994 whilst attempting to rediscover J.W.Taylor's record (see Site 3) I found a single specimen on the top of a wall much lower down the valley than the falls (see Site 3). This was under very straggly Ivy shaded by Blackthorn. In 1998 I found it in small numbers a short distance away from this spot on the top of a mossy wall on the east side of the footpath which was well shaded by Ash. It was again found in good numbers during a field meeting of the Conchological Society of Great Britain and Ireland (CSGBI) in May 2000 and subsequently on 17.10.2006. I do not consider this site to be that of Taylor as the distance is too great from Beezley Falls and is actually lower down than a second set of falls known as Snow Falls.

13. Sedburgh Cemetery

Found on the top of the surrounding wall under fruiting Ivy. Re-found 16.10.2006 on various parts of the wall.

14. East Banks Farm, Dent

Originally found by Barry Colville on 29.08.1994, it was fairly abundant on a limestone wall under fruiting Ivy on the south side of the road by a track (SD710865). This site was lost when the wall was rebuilt. On 16.10.2006 both Mountain Whorl Snail and Wall Whorl Snail were found on the wall on the north side of the road between SD71258642 and SD71348636.

15. Peas Gill House, Gawthrop

On a limestone wall shaded by Blackthorn on the east side of the road. There is some moss on this wall and Mountain Whorl Snail can be found easily under the capping stones. Re-found at SD68638687 on 16.10.2006 along with Striated Whorl Snail *Vertigo substriata*, a snail associated (but not exclusively) with damp old woodland, which would indicate that the wall remains in a fairly damp condition at all times.

16. Whernside Manor

Originally two specimens were found at this site which is a shaded limestone wall with some moss on the north side of the road. The trees shading this wall are on the opposite side of the road but the wall on the side having the trees, which has good Ivy cover, does not contain Mountain Whorl Snail at all. A single live adult was found after a lengthy search on 16.10.2006 at SD72488592.

17. Gate Manor

Two specimens were found on an Ivy-covered wall at the south side of a road in 1994 at SD66780.89640. Just a single worn shell was found here on 16.10.2006 but Mountain Whorl Snail was located nearby on an Ivy-clad wall at SD66808973.

18. Cray Gill
Under the capping stones on limestone walls with some moss on both sides of the gill, on the west shaded by Hazel and on the east by Ash. There are several shaded Ivy-covered walls on the nearby road but it appears to be found only on a very short section by the road bridge. Re-found at this site on 29.09.2006.

19. Crook Gill
This is really a dog-leg extension from Cray Gill but the moss cover is far greater and the shading, by Hazel, more dense. Mountain Whorl Snail is found on the south edge of the gill and at a slightly higher altitude. Again it is more readily found under the capping stones.

20. Duncombe Park
This is the only record for VC62 and is the most easterly site for Mountain Whorl Snail not only in Yorkshire but in the whole country. The site is a derelict oolitic limestone wall (Plate 4b) in mixed woodland with some Ivy. [First recorded 22.10.1997 at SE59408357 when several individuals were found in moss and litter on the wall top, not always under Ivy (A.A. Wardhaugh). Most recently found at this site on 30.10.2014 during a Yorkshire Conchological Society (YCS) visit. One live individual found to the east on the same wall at SE599835 on 31.10.2009 (A.A. Wardhaugh).]

21.Swilla Glen, Ingleton
Found by B. Colville on a mossy wall shaded by trees on the east side of the River Twiss just outside the SSSI during a field meeting of the CSGBI in May 2000. Once more I believe that the original site (see Sites 3 and 4) would have been higher up the valley.

22. Chapel-le-Dale
Abundant on shaded mossy walls on both sides of the road just north of the road bridge. Re-found here on 16.10.2006 between SD73817717 and SD73867718 on the north side of the road and also from the entrance to the church car park to SD73887716 on the south side.

23. Brae Pasture Yorkshire Wildlife Trust Nature Reserve
Found on a shaded mossy wall under Ash and hawthorn. Re-found at SD78937421 on 17.10.2006.

24. Scoska Wood National Nature Reserve, Littondale
Found on a collapsed mossy wall shaded by Ash on 06.09.2003 during a YCS visit. Re-found on 11.06.2006 at SD91307277.

25. Coverham Bridge
Found on a moss- and Ivy-covered wall under Ash, April 2005 at SE10518619. This wall was rebuilt, albeit sympathetically, during 2005 to 2006. It was revisited on 10.10.2006 when, regrettably, no specimens were found. Hopefully some individuals will have survived the rebuild and the wall will be recolonized.

26. Horton-in-Ribblesdale
The site is a 4-5m stretch of half-collapsed wall bordering a car park on the west side of the road to New Houses from Horton-in-Ribblesdale (SD80737281). The wall is moss-covered and shaded by Ash and Alder *Alnus glutinosa*. Two specimens were found on 09.05.2006.

27. Oddies Lane, Ingleton
The site is a collapsed wall on the eastern edge of Lenny Wood, which is the eastern side of Swilla Glen (see Sites 4 and 21), Ingleton. The wall is shaded by Ash, Hazel and Crab Apple *Malus sylvestris* with a thick moss covering. Mountain Whorl Snail was found here along with Wall Whorl Snail on 17.10.2006. [Mountain Whorl Snail was re-found here on 11.08.2012 by myself as follows: SD69617364 (one adult and one juvenile), SD69707365 (one adult), SD69477351 (nine adults/subadults and four juveniles).]

Only five (Sites 1-4 and Site 25) of the 27 sites listed above are not known to be extant at this time, though Beezley Falls has a site further down the valley (Site 12) and the Swilla Glen site is possibly the same as Site 21.

Wall Whorl Snail *Vertigo pusilla*

1. Went Vale
Located by Charles Ashford in 1854 and described as 'among fine debris on magnesian limestone' (Taylor & Roebuck, loc.cit.).

2. Guisborough
Described as 'very scarce' by Hey (1879), the exact locality not being given.

3. Spofforth/Wetherby
Described as under Ivy on the top of a limestone wall (YCS Record Book).

4. Malham
Despite a great deal of molluscan survey work carried out at Malham, in the 1950s by L.W. Stratton, in the 1970s by Michael Kerney and Robert Cameron and an extensive survey of the estate by Adrian Norris in the 1990s, Wall Whorl Snail has not been seen in the area since the original record by William West, who found two specimens (Taylor & Roebuck, loc.cit.). [These may be the two reported by Soppitt & Carter (1888).]

5. Cantley Park Woods
Recorded by J.W. Taylor 14.05.1883 (Taylor & Roebuck, loc.cit.). There are also specimens in Doncaster Museum labelled 'Cantley Hall area 1902'.

6. Ackworth
There have been no records since the original discovery in September 1885 by J. Hardy (Taylor & Roebuck, loc.cit.). [Ashford (1874) included Wall Whorl Snail and recorded it as very common in Went Vale in the list of the molluscs of the Ackworth area but extensive examination of the area has since failed to reveal any specimens.]

Sites 1, 2, 3, 5, and 6 are all located either on or close to the Magnesian Limestone; those which are 'close to' are certainly within the area where the limestone has been used as a building medium. There are numerous walls which appear suitable for Wall Whorl Snail throughout this Natural Area yet none of these sites is known to have populations. The area of Wentvale has been visited innumerable times by conchologists for a different reason, yet at no time has Wall Whorl Snail been re-found. Certainly there are areas of limestone cliff which have Ivy-covered ledges but which are very inaccessible. These ledges would be an ideal site for it. The area of Spofforth and Wetherby has been extensively searched by both A. Norris and myself in attempts to discover Wall Whorl Snail but without success. It is more

than probable that it has been lost from this area in the same way as has the Lapidary Snail *Helicigona lapicida*. The area has had to contend with large amounts of pollutant emissions both from the large numbers of power stations around the Doncaster, Castleford and Selby areas and the A1 road which more or less follows the limestone for most of its length. This can only have had a detrimental effect on its habitat.

7. Grassington

Once again there have been no records since the original discovery by W. Webster in June 1885 (Taylor & Roebuck, loc.cit.). Although 'Grassington' covers a large area, many conchologists have, and still do, visit this locality regularly and it is therefore surprising that Wall Whorl Snail has not been re-found.

8. Clapham

One specimen was found by W. West in April 1887 (Taylor & Roebuck, loc.cit.). No modern records exist in the area. I have spent a considerable amount of time checking walls both in the village itself and to the north without result. The station is some distance to the south of the village and it may be that the locality is somewhere between the two.

9. & 11. Helks Wood and Swilla Glen, Ingleton.

Helks Wood occupies the high ground on the west side of Swilla Glen and Wall Whorl Snail was said to be plentiful under stones and moss (Collier, 1889). At Swilla Glen it was described as very common (Booth, 1921). A meeting of the CSGBI at the site in May 2000 failed to find any specimens in either area. Several museums hold large sets of specimens collected from the Ingleton area.

10. & 14. Old Hall and Castle, Ayton

Recorded some 33 years apart, at Old Hall on 04.04.1890 (Hargreaves, 1890; Taylor & Roebuck, loc.cit.) and Ayton Castle in 1923 by W. Gyngell (Wallis & Wallis, 1956). At Ayton Castle it was 'on a wall'. Successive conchologists have spent a great deal of time searching in the area without success. [The castle has been on the Historic England Sites at Risk Register for many years and access is very restricted.]

12. Darley District

First found by W.C. Clarkson on 18.01.1898 (Taylor & Roebuck, loc.cit.). This is a large area south of the River Nidd, where there are no modern records for Wall Whorl Snail. There would appear to be many suitable walls in the area and a concerted effort may reveal sites.

13. Martin Beck Wood

There are specimens in Doncaster Museum from this site marked 19.06.1920.

15. Aysgarth Station

Recorded by Ralph Lowe (1944) from 'a wall near Aysgarth Station'. There are many suitable stretches of wall both around the village and in the area of Freeholders Wood where Mountain Whorl Snail is found. It was re-found by A. Norris in 1970 but a thorough survey of the station area in 1995 failed to produce any Wall Whorl Snail.

16. Jervaulx Abbey

Known originally from a single live specimen found at the base of a wall by L. Lloyd-Evans in 1969 (Dearing 1970). The site should be a safe one provided that weed control spraying does

not take place. [Re-found during a YNU meeting on 16.6.2007, three specimens on a low wall at SE17138577, D. Lindley, A. Norris, A.A. Wardhaugh.]

17. Low Bolton, Redmire
Very common under Ivy on an old broken-down wall by a road junction. Re-found 20.10.2003. [I revisited the site on 08.05.2006 and readily found it on roadside walls from the road junction to a joining wall at SE03923.90827 and regarded it, at that time, as probably the best site in Yorkshire for Wall Whorl Snail.]

18. Delves
Plentiful on a shaded wall under Ivy (Norris, 1977). [Re-found 27.8.1998 at the original site which is on the south side of the road (NZ79410469) when five individuals were present in a litter sample taken by A.A. Wardhaugh.]

19. East Banks Farm, Dent
First recorded here by B. Colville on 29.08.1994 when it was abundant. See Mountain Whorl Snail Site 14 for details of the locality.

20. Cray Gill
A single live specimen found on the east side of the gill in moss on a wall shaded by Ash. The site was revisited in 1998 by eight naturalists who spent a total of 24 person-hours in the gill looking for Mollusca but no further specimens were found. It was eventually re-found on 29.09.2006.

21. Colt Park Wood/Shaw Pasture
The National Biodiversity Network Gateway has a record for this site. Whilst it is possible that it occurs here, the record has not been verified, is known to neither the national nor Yorkshire Molluscan recorders, nor has any published record been found.

22. Near Egton Bridge
Plentiful, on a partly shaded wall under Ivy [in a litter sample which contained 21 individuals, 27.08.1998. A.A.Wardhaugh.]

23. Keld
The site is a partially collapsed wall beside an old gateway (NY89540105), heavily shaded by Hazel with a thick moss covering when located on 17.10.2006. There was an accumulation of litter among the stones on the top of the wall and Wall Whorl Snail was found under a capping stone. This is the most north-westerly known site for it in the county.

24. Oddies Lane, Ingleton
Found together with Mountain Whorl Snail on a stretch of wall c.10-12m long on 17.10.2006. See Mountain Whorl Snail Site 27 for details of the locality. [Both snails were re-found here by myself on 11.08.2012 at SD69707365; fifteen Wall Whorl Snail and one Mountain Whorl Snail.]

25. Kettlewell
[Six specimens, including two juveniles, were found on 04.07.2009 in litter build-up on a short section of north-east facing limestone crag. This is probably the only wild site for this snail in Yorkshire (Norris & Lindley, 2010).]

26. Duncombe Park
[First found as two live individuals in a litter sample at SE599835 from under horizontal stones on the top of a dry stone wall partly shaded by Ash and Hazel along the northern edge of Blackdale Howl Wood, A.A. Wardhaugh, 31.10.2009. Several individuals found during a YCS meeting on 30.10.2014 from SE600835 to SE596836.]

27. Rievaulx Terrace
[A single empty shell found in a litter sample of grass, moss, Hawthorn *Crataegus monogyna*, Ash and Field Maple *Acer campestris* from the partly shaded retaining wall at SE57848464 on 16.10.2010. A.A. Wardhaugh.]

28. Fairburn
[First recorded by Terry Crawford 19.05.2012 from New Field Lane, near Fairburn Ings, under twigs and stones lying on an Ivy-covered bank adjacent to an old collapsed wall (Plate 4b). Found by T.J. Crawford, D. Lindley and A. Norris 31.10.2013 to be common at the following Grid References: SE453279; SE45398.28309; SE45379.28270; SE45332.28059.

Discussion

The British distribution of Mountain Whorl Snail is centred on north-western England with some sites in Scotland and Wales. The Yorkshire distribution is primarily north-western excepting the outlying site at Duncombe Park (Kerney, 1999). At all these sites it is found on walls shaded with either Ash, Hazel or Blackthorn. Dean & Kendall (1908) discuss the distribution of both whorl snails in North Lancashire and Westmoreland. At the time Mountain Whorl Snail was known from only one Yorkshire site. Two comments made in this paper are of interest. Firstly when describing the walls on which the snails were found they refer to them being covered in parts by small-leaved Ivy. Boycott (1934) also makes reference to Ivy, stating that both snails 'particularly like walls with Ivy on them'. Of the 27 known sites for Mountain Whorl Snail only eight have Ivy cover on the walls while 15 do not (and four in which this is unknown). In some circumstances the Ivy cover consists of only a few strands but in others large clumps of fruiting Ivy are present. The association with Ivy does not therefore necessarily follow in Yorkshire. It may be that earlier conchologists have directed themselves towards Ivy-covered walls and, finding specimens, concluded it was the preferred site. It may also be the case that a particular stretch of wall has at some time in the past had Ivy cover which has since been lost. Where there is no Ivy or it is straggly then there is moss cover on the coping stones, though not overly thick, with leaf debris from the tree cover. In these circumstances Mountain Whorl Snail is normally found on leaf debris or moss at the side of, or under, these coping stones. I have not provided figures but this snail can be just as abundant on walls without Ivy as those with it. Its small size makes it much more difficult to find by eye without sieving but it is often the case that specimens can be easily located crawling on the wall or debris after rain. Of all these sites the exception is Ling Gill (Site 10), where Mountain Whorl Snail is found on the ground among grass, one possibility being that it has been blown from the nearby wall where it also occurs. However, as noted above, the site appears to have the remains of a wall, long since collapsed, where Mountain Whorl Snail could have persisted. It does occur in similar conditions in continental Europe. In Austria I have found it after heavy rain crawling on the wooden cross members of a fence situated in a field with grass at least 45cm tall.

The second statement from Dean & Kendall (loc.cit.) concerns altitude records for Mountain Whorl Snail which, they state, "is generally a low one" but suggest a site for it at Hutton Roof to be "comparatively high at 300ft (90m)". Three of the Yorkshire sites are over 300m, twelve are over 200m and twenty are over 150m, with just two below 100m. The mean for all sites is c.190m. I would therefore not consider the known Yorkshire sites to be 'low'. In Scotland it has been found in moss on stable limestone screes at c.400m (Marriott & Marriott 1984).

The distribution of Wall Whorl Snail is similar in that there is a large number of sites centred around Cumbria. Additionally, a band of sites runs from the Bristol Channel to the Norfolk coast with scattered sites in Wales and Scotland. Wall Whorl Snail is much more catholic in its choice of habitats in the rest of Britain. It can be found on dry banks, sand dune systems and occasionally on trees (Kerney, loc.cit.). In south-west England it is often found in woodland with moss-covered stones. Descriptions of two old sites in Yorkshire, at Helks Wood, Ingleton (Collier, 1889) and at Clapham (Taylor & Roebuck, loc.cit.) describe it as living in such localities. The number of known extant sites in Yorkshire (12) is much fewer than for Mountain Whorl Snail (22). It is definitely the more scarce of the two, mainly due to the loss of the Magnesian Limestone sites but also because of the apparent low density populations at some sites. It would appear to be doing well at only four sites (17, 18, 22 and 28). It is true that on some occasions it occurs with Mountain Whorl Snail. Of the known extant localities, they can be found in close proximity at Cray Gill, Duncombe Park, Low Bolton, Oddies Lane and East Banks Farm. At the last of these it is of interest to note that there are patches of hedgerow which encroach upon the wall and it was found that Wall Whorl Snail favoured these areas. Mountain Whorl Snail was found on those parts of the wall with a more open aspect. Of the older sites only the Helks Wood/Swilla Glen area holds, or has held, both whorl snails, yet in no published record is there mention of them being found together.

Conclusion

Whilst it is true that both snails are difficult to locate due to their small size and that a newer awareness by conchologists to check sites without Ivy has produced more sites in recent years, both still appear to be in a vulnerable position. During the period 1969 to the present there have been 22 new sites located for Mountain Whorl Snail but only 13 for Wall Whorl Snail.

Owing to their small size, range extension for these snails is difficult, especially at sites with low population density. However, both are known to be aphallic and able to self-fertilize, which will obviously assist where population numbers are low. Research in Poland on Wall Whorl Snail has shown aphallic populations to be viable for several generations without any adverse effect on reproductive ability (Pokryszko, 1987). It is also probable that wind distribution is a factor to consider; the small size of these animals means they can easily be blown some distance. With this in mind I believe every effort should be made to ensure walls in the immediate vicinity of known sites are maintained at an 'acceptable standard' for these snails. However, at the current time this is very difficult to assess as no research has been carried out into their exact habitat requirements, especially concerning humidity. If it is ensured that the walls upon which the two snails occur are maintained without cementing and that there is some native tree shading, this may suffice.

Table 1. *Vertigo alpestris* sites in Watsonian Yorkshire in chronological order

Location	NGR	VC	Altitude (m)	Recorder	Date	Ivy present	Population extant
Cottingley Bridge	SE112380	63	76	Mr Bilton	1887	?	N
Farfield, Addingham	SE0751	64	120	W. Nelson	Pre- 1906	?	?
Beezley	SD7074	64	170	J.W. Taylor	1908	N	?
Swilla Glen	SD6973	64	170	W.D. Roebuck	1908	?	?
Apedale Beck	SE043920	65	250	R.H. Lowe	1952	?	Y
Low Bolton	SE040909	65	150	A. Norris & R.H. Lowe	1972	Y	Y
Keld	NY896011	65	310	L. Lloyd-Evans	1972	N	Y
Aysgarth	SE013891	65	205	A. Norris	1985	Y	Y
Downholme Park	SE112995	65	150	L. Lloyd-Evans	1987	N	Y
Ling Gill	SD8078	64	330	A. Norris	1987	N	Y
Arncliffe	SD933720	64	220	D. Lindley	1992	Y	Y
Beezley	SD701739	64	150	D. Lindley	1994	N	Y
Sedburgh Cemetery	SD652916	65	110	B. Colville	1994	Y	Y
East Banks Farm, Dent	SD710865	65	170	B. Colville	1994	Y	Y
Gawthrop	SD687869	65	250	B.C./D.L.	1994	N	Y
Whernside Manor	SD725859	65	170	B.C./D.L.	1994	N	Y
Gate Manor	SD667896	65	130	B.C./D.L.	1994	Y	Y
Cray Gill	SD934786	64	240	D. Lindley	1996	N	Y
Crook Gill	SD935788	64	270	D. Lindley	1996	N	Y
Duncombe Park	SE594836	62	90	A. Wardhaugh	1997	Y	Y
Swilla Glen	SD694733	64	130	B. Colville	2000	N	Y
Chapel-le- Dale	SD738771	64	240	D. Lindley	2000	N	Y
Brae Pasture	SD789742	64	316	D. Lindley	2003	N	Y
Scoska Wood	SD913727	64	265	D. Lindley	2003	N	Y
Coverham Bridge	SE105861	65	145	D. Lindley	2005	Y	N
Horton-in-Ribblesdale	SD807728	64	230	D. Lindley	2006	N	Y
Oddies Lane, Ingleton	SD697738	64	180	D. Lindley	2006	N	Y

B.C. = Barry Colville, D.L. = David Lindley, L.L-E. = Lloyd Lloyd-Evans

Table 2. *Vertigo pusilla* sites in Watsonian Yorkshire in chronological order

Location	NGR	VC	Altitude (m)	Recorder	Date	Ivy present	Population extant
Wentvale*	SE5017	63	?	C. Ashford	1854	?	?
Guisborough*	NZ6116	62	?	W.C. Hey	1878	?	?
Spofforth/ Wetherby*	SE3651	64	?	Mr. Binnie	1880	Y	?
Malham*	SD9062	64	?	W. West	1882	?	?
Cantley Park Woods	SE6202	63	?	J.W. Taylor	1883	?	?
Ackworth*	SE4416	63	?	J. Hardy	1885	?	?
Grassington*	SE0064	64	?	W. Webster	1885	?	?
Clapham*	SD7469	64	?	W. West	1887	?	?
Helks Wood*	SD695743	64	200	C. Oldham & E. Collier	1888	?	?
near Old Hall, Ayton	SE9985	62	?	J.A. Hargreaves	1890	?	?
Swilla Glen, Ingleton*	SD6973	64	?	A. Hartley	1897	?	?
Darley	SE2059	64	?	W.C. Clarkson	1898	?	?
Martin Beck Wood	SK6294	63	?	Greevz-Fysher	1920	?	?
near Ayton Castle	SE9885	62	?	W. Gyngell	1923	?	?
Aysgarth	SE013889	65	200	R.H. Lowe	1944	?	?
Jervaulx Abbey	SE172857	65	107	L. Lloyd-Evans	1969	N	Y
Low Bolton, Redmire	SE040909	65	150	A. Norris & R.H. Lowe	1972	Y	Y
Delves	NZ7941	62	140	B. Colville	1975	Y	Y
East Banks Farm, Dent	SD710865	65	170	B. Colville	1994	Y	Y
Cray Gill	SD934786	64	240	D. Lindley	1996	N	Y
Colt Park Wood	SD775774	64	?	A. Fowles	1998	?	?
near Egton Bridge	NZ798049	62	50	A.A. Wardhaugh	1998	Y	Y
Keld	NY895010	65	310	D. Lindley	2006	N	Y
Oddies Lane, Ingleton	SD697738	64	180	D. Lindley	2006	N	Y
Kettlewell	SD960725	64	300	D. Lindley	2009	?	Y
Duncombe Park	SE599835	62	100	A.A. Wardhaugh	2009	Y	Y
Rievaulx	SE57841	62	160	A.A. Wardhaugh	2010	N	Y
Fairburn	SE45365	64	30	T.J. Crawford	2012	Y	Y

* Grid references for these sites are indicative only of the general area and the record may have come from an adjacent location.

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I should like to thank Barry Colville, Terry Crawford, Adrian Norris and Tony Wardhaugh for information on sites and Michael Kerney and Adrian Norris for records extracted from notebooks held at the Natural History Museum, London and Leeds City Museum. Lastly I am

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Are gardens good for mining bees?

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Solitary bees are common in gardens. 30 species were found in a large garden in York (Archer, 2004), 45 species in a suburban garden in Leicester (Archer, 2013) and 145 species (range 14-118) from a study of 12 gardens (Archer, 2014). 183 of the c.228 solitary bees recorded nationally (c.80%) are mining bees or cleptoparasites dependent on nesting bees (Edwards *et al.*, 2005).

A typical life cycle of soil-nesting solitary bees can be illustrated with the early spring bee *Andrena clarkella*, which nests in sandy, thinly vegetated soils on the level in sunny situations. The female mines a single vertical burrow with branches in which the cells are built. Each cell is provisioned with a pollen-nectar ball on which an egg is laid. After hatching, the larva quickly eats the provisions and matures into a resting stage until the following spring when it pupates and emerges as an adult. The sexes mate and the females mine the burrows. A nomad bee may dig into the burrow and lay an egg in a cell. On hatching, the nomad kills the host's egg and eats the provisions, hence it is called a cleptoparasite.

Whether mining bees are well represented in gardens can be investigated with the use of two indices. The Aerial Nester Frequency (AF) is the proportion of solitary bee species that nest above the ground and the national value for AF is 17.9%. From the York garden the AF has a relatively high value of 40.0%, indicating a relative lack of mining bees. From the Leicester garden for the bees only recorded in 1-7 years (infrequent visitors) the AF was 21.4%, near the national value. For those recorded in 8-27 years (frequent visitors) the AF was a high of 45.0%. From the 12 garden study those found only in 1-4 gardens (infrequent visitors) the AF was 15.4%, similar to the national value, but for the bees found in 5-11 gardens (frequent visitors) a high value of 36.4%. The relative lack of mining solitary bees presumably is due to the frequent disturbance of the soil and the lack of bare or sparsely vegetated soil in sunny situations. Some mining bees are found in gardens, e.g. the Tawny Mining Bee *Andrena fulva*. The infrequent visitors are usually called tourist species, perhaps being found in gardens by chance or those in dispersal searching for favourable nesting sites or maybe just rare bees.

Another index called the Parasitic Load (PL) measures the percentage of solitary bees that are cleptoparasites. The national average for PL varies between 25 and 40% for semi-natural sites. From the York garden the PL was 16.7%, indicating a relative lack of cleptoparasites. From the Leicester garden the PL for the infrequent visitors was 33.3%, which is within the national values, but only 16.7% for the frequent visitors. From the 12 year study the PL for the infrequent visitors was 33.6% and 13.2% for the frequent visitors. The relative lack of cleptoparasites can be related to their behaviour of tending to occur around the nesting sites of their hosts. Since there is a relative lack on mining bee species in gardens there will be a relative lack of cleptoparasitic species.

The relative lack on mining and cleptoparasitic bees has also been found in garden studies from Liège (Belgium) (Jacob-Remacle, 1984) and New York (U.S.A.) (Matteson *et al.,* 2008). These results show that gardens are relatively not so good for mining bees and their cleptoparasites.

In the wider urban area surrounding gardens, the Parasitic Load increases and Aerial Nester Frequency decreases in York (Archer, 2012) and Sheffield (Archer, 2009), due to the greater occurrences of subterranean nesting sites, e.g. river banks, closely mown lawns and paths.

A third index attempts to measure species quality or conservation interest by dividing the solitary wasps and bees into six groups. The three low quality groups (with species scores Universal (1), Widespread (2) and Restricted (4)) are found in more than 70 hectad squares with varying distributions in England, Wales and Scotland. The three high quality groups (with species scores Scarce (8), Rare (16) and Very Rare (32)) depend on the number of hectad squares (1-70) in which each is found. The species scores for each site are added together to give a Quality Score (QS) and when the QS is divided by the number of species found at a site it generates a Species Quality Score (SQS). It has been found that the QS tends to increase with the area of a site while the SQS is relatively independent of site area, so it can be used to compare sites of different areas (Archer, 1999).

The SQS for the York garden (1.5) and for the urban areas (York, Sheffield, 2.2) are lower than semi-natural sites (2.4-2.8) in Yorkshire. Similarly, the SQS of the Leicester garden (2.2) is lower than Midland semi-natural sites (2.6-3.4) and the frequent visitors of the 12 garden study (1.6) fall within the lower part of the range for English semi-natural sites (1.2-5.5). The lower SQS values for gardens are due to the relative lack of high quality or rare species. However, gardens are still important refuges for the low quality or common ones.

To encourage solitary mining bees in gardens it is necessary to expose dry friable soils by removing the plants so that the sun can heat the soil. Part of a lawn could be bulldozed to expose the soil with the bulldozed part formed into a bank. In contrast, most bumblebees need a densely vegetated area to attract small mammals whose burrows provide nesting sites. Others nest at ground surface level when a good leaf litter layer and dense grass or herb growth is needed.

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Plate 1a. A female Large House Spider *Tegenaria saeva* in a familiar setting.

Geoff Oxford

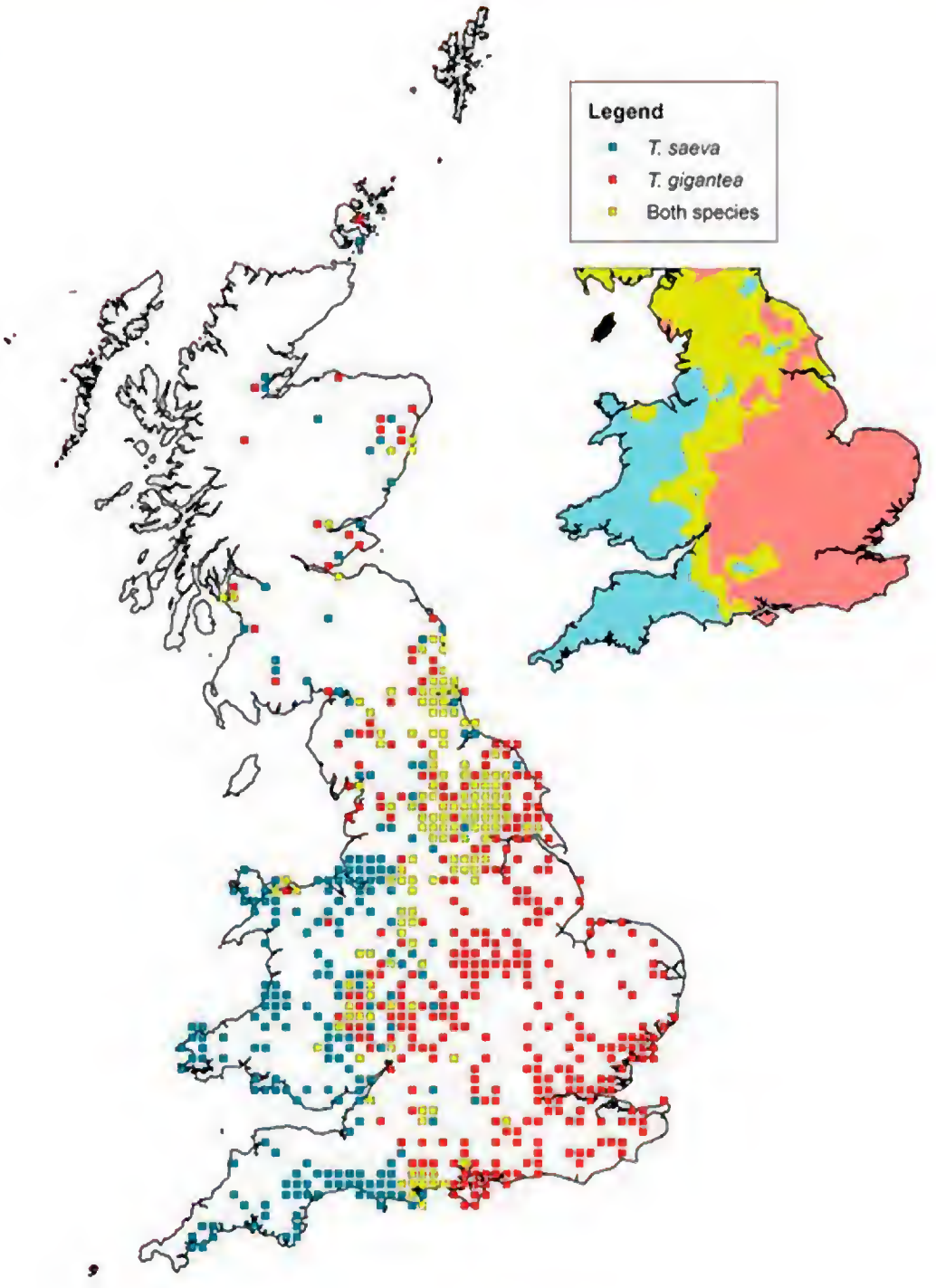

Plate 1b. Hectad distributions of *Tegenaria saeva* (blue) and *T. gigantea* (red) in Britain. Hectads in which both species have been recorded are shown in yellow. The main map includes all data verified by Geoff Oxford or Peter Croucher up to and including 2015. The inset shows an interpolated map generated with data collected up to 2003. For further information on interpolation methods see Croucher *et al.* (2004).

Plate 2. Winter (above) and Summer (top right) on Cali Heath near Barmby Moor (see pp20-24).

Right: The Nationally Notable robber-fly *Lasiopogon cinctus*, which is found on Cali Heath (see p21). *Roy Crossley*

Plate 3. Scout Dike, the reservoir near Penistone with associated scrub and grassland. See pp24-26. *John Coldwell*

Plate 4a. *Vertigo* species (see pp27-38).
Above: *Vertigo pusilla* Wall Whorl Snail (left) and *V. alpestris* Mountain Whorl Snail (right). Shell height and width 2.0mm x 1.1mm and 1.9mm x 1.1mm respectively.
V. pusilla is a sinistrally coiled species (shell mouth to the left),
V. alpestris is dextrally coiled (shell mouth to the right).

Plate 4b.
Right: Partly derelict stone wall where both *Vertigo alpestris* and *V. pusilla* occur, along the northern edge of Blackdale Howl Wood, Duncombe Park.

Below: Original site for *Vertigo pusilla* at Fairburn, where it can be found on the wall and among the ground veg-Etation. *David Lindley*

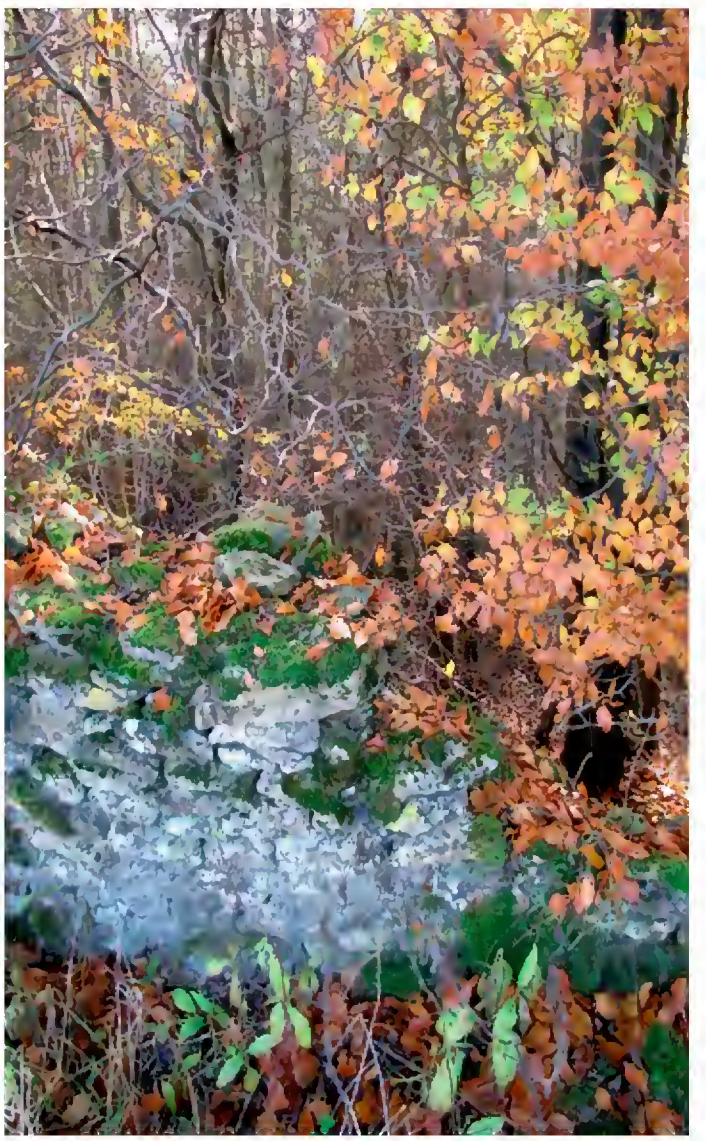

Plate 5. (See p58). The unusual tansy *Tanacetum vulgare*, showing (inset) the rays which are absent in the normal type.
Geoff Oxford

Plate 6. (See pp41-42). The CoCoast project aims to be the largest experimental marine citizen science programme of its kind undertaken within the UK.

Note that YNU Marine and Coastal Section events are part of the 'Capturing our Coast' project.

Plate 7. YNU Excursions 2016 (see p75).
VC63 Excursion to Austerfield near Doncaster. Plants to be seen include (above) Birds-foot *Ornithopus perpusillus*. The Labyrinth Spider *Agelena labyrinthica* was discovered here, one of its few Yorkshire locations, in 2015.
Joyce Simmons

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Capturing Our Coast and the importance of the Yorkshire coast

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We believe that the responsibility for protecting our seas, beaches, rocky shores and wonderful marine biodiversity belongs to all of us and that we should strive to ensure their protection for future generations. From 2010-2013 a project named the Big Sea Survey, funded by the Heritage Lottery Fund, was undertaken to monitor and record coastal marine life along the North-East coast with help from citizen scientists.

Over the last 10 years the involvement of citizen scientists in research has been on the rise. Previously there have been concerns about the use of citizen scientists with respect to the robustness and reliability of data. However, research by Hyder *et al.*, (2015) has shown that, with training, citizen science-based data can be as valid and robust as data collected by scientists.

Despite the huge success of the Big Sea Survey, one drawback of this project was the fact that the survey region was restricted solely to the North-East of the UK. Building on the success of the Big Sea, researchers at Newcastle University's Dove Marine Laboratory decided to take a UK stance and thus the Capturing Our Coast project was born. Capturing Our Coast, or CoCoast (Plate 6), is a national citizen science project funded by the Heritage Lottery Fund. The official launch of the CoCoast project was in January of this year and partners on the project have been blown away by the interest from volunteers.

What is Capturing Our Coast?

CoCoast is led by Newcastle University's Dove Marine Laboratory and involves the universities of Hull, Portsmouth and Bangor and the Scottish Association for Marine Science. It also involves a number of other organisations including the Marine Biological Association in Plymouth, the Marine Conservation Society, Earthwatch Institute, the Natural History Museum, Northumberland Wildlife Trust, Cefas, the Durham Heritage Coast, Thanet Coast

and the North West Coastal Forum. The CoCoast project aims to be the largest experimental marine citizen science programme of its kind undertaken within the UK. Within the CoCoast project, members of the public and scientists will work together to collect information about marine species along our coastline. Volunteers will undertake training provided by marine researchers at each of the seven hubs, with the aim of training over 3,000 volunteers. Our trained citizen scientists will collect data around key species, helping to fill gaps in distribution records, as well as informing future policy and conservation strategies. Volunteers can choose from a priority list of eight species packages on which to work, with each pack containing a maximum of eight species. Species packages were designed to ensure that a range of species was represented and was not restricted to particular regions. Volunteers will also be provided with ongoing support in the form of field support days to ensure retention of identification skills and high quality data. CoCoast will also be available to those who cannot get out to the shore, with the establishment of web-based activities such as those found on Citizen Science Alliance e.g. Planet Hunters. In addition to recording species data, volunteers will have the opportunity to assist with experiments undertaken by each of the 7 hubs (Newcastle, Hull, Portsmouth, MBA, MCS, Bangor, SAMS) which seek to answer a range of questions about species interactions and impacts on the marine environment across latitudes and environmental conditions.

The Yorkshire Hub

The University of Hull, based at the Scarborough Campus, is one of the seven regional hubs that are involved in this project. Our hub forms the base for the Yorkshire Coast region surveying shores from the Tees to the Humber, an area which we believe is crucial for biodiversity monitoring. The CoCoast Yorkshire team consists of Principal Investigator Dr Sue Hull, Project Officer Nicky Dobson and Research Assistant Ruth Dunn and we are excited to be flying the flag for the Yorkshire coast. CoCoast Yorkshire is pleased to be working alongside organisations such as the Yorkshire Naturalists' Union and Yorkshire Wildlife Trust in order to coordinate our intertidal survey effort for the benefit of the marine environment.

For any volunteers wanting to participate in the project, recruitment for volunteers is still open, please visit www.capturingourcoast.co.uk. If anyone would like any further information about becoming a CoCoast Yorkshire citizen scientist please do not hesitate to contact us.

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YNU Notice: Errata

The Naturalist 1090 Plate VI, centre pages should have named the Mirid plant bug as *Leptopterna dolobrata*, not *Stenotus binotatus*.

The description of the East window, St Mary, Scarborough (p203, para. 4) was a personal observation by the author and not sourced from Stead (1927).

Review of the Tunny or North Atlantic Bluefin Tuna in Yorkshire waters: history and trends

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A bullet from the ocean depths,
A swimming projectile
Ode to a Large Tuna in the Market by Pablo Neruda

The Tunny or North Atlantic Bluefin Tuna *Thunnus thynnus* is by far the largest of five tuna species in the subgenus *Thunnus, o*thers being the Southern Bluefin Tuna *T. maccoyii*, the Pacific Bluefin Tuna *T. orientalis*, the Bigeye Tuna, *T. obesus* and the Albacore *T. alalunga*.

It occurs throughout the North Atlantic Ocean and adjacent warm seas, including the Mediterranean in the east and Gulf of Mexico in the west. This highly migratory, surface-living, schooling fish is the only large pelagic fish living permanently in temperate Atlantic waters. Though typically oceanic, it seasonally enters shallower coastal waters (Wheeler, 1978, Collette & Nauen, 1983; http://iss-foundation.org/bluefin/).

Throughout their potentially long lives of over 15 years they are opportunist feeders. Zooplankton (primarily copepods) is thought to make up the diet of tuna larvae (Fromentin & Powers, 2005). Juveniles typically feed on crustaceans, fishes and cephalopods while adults are generally piscivorous, primarily eating available baitfish such as Sardine *Sardina pilchardus*, Herring *Clupeus herangus* and Mackerel *Scomber scombrus* (Chase, 2002). Being apex predators, Tunny play an important role in pelagic ecosystems (http://iss-foundation.org/bluefin/).

The adults of the eastern North Atlantic population spawn in the Mediterranean, after which they undertake extensive migrations in search of food, visiting Northern European waters in summertime, extending as far north as Iceland, Norway and the Baltic (Wheeler, 1978, Muus & Dahlstrom, 1985). Here they follow spawning shoals of Mackerel and Herring, a phenomenon which brings Tunny into the North Sea and waters off the Scarborough coast.

History of recorded occurrences in the UK and Yorkshire coastal waters: 18th & 19th centuries

The Tunny was first recorded in British waters in 1769 when a specimen 7ft 10 inches (240cm) in length and weighing 460lbs (210kg) was killed at Inverary on Loch Fyne (Pennant, 1771). Dr. James Scouller (1831) noted a specimen caught in Herring nets in the Gairloch near Greenock in July 1831 and donated it to the Andersonian Museum, University of Glasgow.

In the North Sea, Yarrell (1836), quoting a Mr Donavan, noted that three 'Tunnies' were taken near the Thames estuary in 1801 and brought to Billingsgate fish market and a Mr Paget reported that "small specimens are not unfrequently caught during the Mackerel fishery off Yarmouth". The earliest published records from Yorkshire waters are of a

specimen 7 or 8 feet (2-2.3m) in length at Bridlington around 1840 (Meynell, 1844) and one weighing *c.*480lbs (218kg) which stranded at Teesmouth in either September 1853 or October 1854 (Hogg, 1855a; b). From these occurrences it was concluded the Tunny was an "accidental visitant from more southern seas, of extremely rare occurrence" (Clarke & Roebuck, 1881).

20th century

In the summer of 1914 the Scarborough naturalist and taxidermist W.J. Clarke first began to receive reports from skippers of local fishing boats that strange fish, the like of which they had not seen before, had been swimming round their boats while the nets were being hauled. These were feeding on fish falling or escaping from the nets, a well-known habit of Tunny. However, the intervention of the 1st World War with the virtual suspension of North Sea fishing prevented further investigation. Then in the summer of 1926 similar reports were again reaching Mr Clarke. Enquiries made to commercial fishermen showed that Tunny were indeed visiting Yorkshire waters, evidently in increasing numbers during August and September each year. Indeed, in 1929 they became so numerous that complaints were made that these huge fish were breaking up the Herring shoals by their attacks, thus interfering with commercial fishing operations (Anon, 1929, Clarke, 1929).

Le Gall (1927) had already published a map of the British Isles and adjacent continental North Sea shorelines, extending north to Scandinavia and Iceland, showing where commercial fishing operations had taken Tunny. Significant clusters of records were indeed off the Yorkshire coast in sea areas Humber and Dogger but Clarke was evidently unaware of this.

Since Tunny in their feeding frenzies came close in to the boats, many were killed by the fishermen, some shot, others harpooned. At this stage the fish were not brought ashore, as there was no sale for them in the UK, unlike in Nordic and Mediterranean countries. Eventually, in view of the interest created and scenting a good business deal, a Scarborough showman offered 50/- for a Tunny and, within twenty-four hours on 7 September 1929, the Yarmouth steam drifter *Ascendant* landed a fine example on the pier at Scarborough. This had been harpooned 14 miles (22.5km) east of the town. The fish measured *c.*9ft 9inches (3m) in length (and could have weighed in excess of 850lb (385kg), see figure 3) though it was not actually weighed and the measurement methodology was not described. When struck by the harpoon the Tunny, in its efforts to escape, took out 70 fathoms of rope 3 inches (7.6cm) in circumference, and resisted capture for an hour before being hauled to the side of the boat (Anon, *loc. cit.*, Clarke, *loc. cit.*). Clarke referred to the specimen as a Red Tunny, the epithet 'red' referring to the colour of the haemoglobin-enriched meat. This is also an element in the fish's vernacular names in French - *thon rouge,* Italian - *tonno rosso* and Spanish - *atún rojo*. On 9 September 1929, the *Ascendant* crew landed two more Tunny, both harpooned 18 miles (29km) east-north-east of Scarborough and reported that they had killed another nine which were not brought ashore. The two landed specimens measured 8ft 3inches (2.5m) and 8ft (2.5m) respectively. The skeleton of the larger one was prepared for the Zoology Department at Hull University, the smaller one was cut up and eaten and those who tasted it pronounced it very good (Anon, *loc. cit.*, Clarke, *loc. cit.*).

During August and September of 1929 Tunny were very numerous off Scarborough, examples being several times seen as close as one and a half miles (2km) off the pier. In some instances very large shoals were seen breaking the water in pursuit of Herring, and fishing boats reported as many as twenty fish congregated round them while their nets were being hauled (Anon, *loc. cit.*, Clarke, *loc. cit.*).

The North Sea Tunny fishing craze

Through the promotion of W.J. Clarke and with the encouragement of the Scarborough Corporation and Scarborough Harbour Commissioners, a frenzy of interest was generated within the international 'Big Game' sea angling fraternity.

In gratitude for the celebrity and trade attracted to Scarborough, Capt. J.H. Gibson on behalf of the Harbour Commissioners awarded W.J. Clarke and Alderman T. Whitehead (chair of the Commissioners) a gold replica of a Tunny fish as a mark of appreciation (Anon, 1930a; b).

1933 saw the formation of the British Tunny Club based in premises on Sandside, Scarborough, which formed a focus for big game Tunny fishing. It prescribed rules for fishing methods, standards for equipment and protocols for verifying methods of capture and the weighing of specimens. It also presented the much sought after BTC certificates for fish caught and weighed according to the prescribed methods, the certificates embossed with different coloured seals denoting the breaking strain of the line used. Cups and trophies were awarded annually for the heaviest fish of the season and for the heaviest fish caught by women anglers and by novices. The greatest motivating theme throughout was to beat previous records and to achieve the UK or even the world record for the heaviest Tunny caught on rod and line from a rowing boat.

Interest was further fanned by the plethora of press coverage in regional and national newspapers and in sea angling and society magazines, examples of which are represented in corpulent press cutting albums held by the Scarborough Museums Trust. The publication of seminal handbooks on the subject, principally Mitchell-Henry (1934), Taylor (1934a) and Taylor (1934b) gave practical advice on equipment and technique and thrilling descriptions of playing and landing these giant fish.

From 1929 to the outbreak of the 2nd World War and from 1946 to 1954, Scarborough and Whitby hosted the famed North Sea Tunny fishing craze, which perhaps generated the most colourful sporting and social episode in the history of UK big game sea angling. Encyclopaedic accounts of the angling politics, social history, personalities, rivalries and glamour of Tunny fishing off the Yorkshire coast are given in two meticulously researched books: Berry (2010) and Ross (*loc. cit.*).

Lost opportunities

Hoping the upsurge of interest in Tunny fishing might help to increase the scant scientific knowledge of this fish in British waters, Dr E.J. Allen, Director of the Marine Biological Association, Plymouth (MBA), in a letter to the Sport Angling fraternity (Allen, 1933) made the following plea, "*In view of the rare capture of Tuna off our shores up to this time, it is desirable that every opportunity should be made to increase our knowledge of the biology of*

this fish". This resulted in Col. Edward T. Peel, President of the newly-formed British Tunny Club, inviting Dr F.S. Russell of the MBA as a guest on board his 60ft Motor Yacht 'St. George' while surveying for Tunny in the North Sea during the summer of 1933. During this voyage, Russell (1934b) sampled biometric data from 32 specimens from 4 August to 2 September. These included specimens caught by Lady V.D. Broughton, Lt. Col. R. Stapleton Cotton, Mr F. Hannam, Mr Lorenzo Mitchell-Henry, Mr S.V. Hine, Master David Leigh, Mr E. Leigh, Lord Moyne, Col. E.T. Peel, Mr and Mrs T.O.M. Sopwith and Miss G.M. Yule. Russell's study compared measurements of the North Sea (Yorkshire) specimens with those of pre-spawning Tunny populations from the Mediterranean off Tunis (Heldt, 1927) and from the Atlantic off the Algarve (Frade, 1931). Despite instigating a Tunny tagging scheme and boarding Danish, Dutch and British fishing craft in a quest for additional data, Russell (1934b) lamented the limitations of his study through handling such a small sample of specimens. So, despite Dr Allen's plea and Dr Russell's exemplary pioneering work, considering the substantial amounts of money and resources lavished by the big game fishing fraternity in pursuit of the narrow objectives of the sport, little opportunity was taken through the remainder of the Tunny fishing years to undertake further investigations into the physiology and natural history of the fish in question.

The current study

Whereas the extensive press coverage of the 1930s to the 1950s and beyond and the writings of Berry (*loc. cit.*) and Ross (*loc. cit.*) have concentrated on the sporting and human history of Scarborough Tunny fishing, useful though brief summaries of Tunny in Yorkshire waters were provided by Clarke (1944), Spaul (1956) and, notably, Whitaker (1971).

This study attempts to expand on Clarke, Spaul and Whitaker (*loc. cit.*) by re-examining British Tunny Club Year Books and miscellaneous Tunny Club archives housed by Scarborough Museum's Trust, Yorkshire data in Russell (1934 a; b), the notes of W.J. Clarke (1929, 1930 & 1944) and records (mainly by Clarke) in the Annual Fish Reports of the Yorkshire Naturalists' Union 1930-1956. This has generated data on seasonality, weight and length and age classes. A preliminary catalogue of preserved and cast Yorkshire-taken Tunny specimens has also been compiled.

Seasonality

Although it became the fashion for the sport angling fraternity to visit Yorkshire coastal waters and voyage out to the Dogger Bank during the months of August and September, Clarke's interrogation of the commercial fishing fraternity (Clarke 1929, 1930 and YNU Annual Reports) showed that Tunny were actually attending nets being hauled from late June to mid October. The precise dates of capture, though registered on the coveted Tunny Club certificates, were omitted from the lasting records published in the club Year Books; consequently, the relatively few dates available to his study (128 in figure 1) have been gleaned from press reports, the few BTC certificates surviving in the Tunny Club archives and, of course, from the meticulous Dr. Russell (1934b). Clarke (1930) noted that 1930 was a particularly early season, the steam drifter *Hawthorndale* reporting Tunny appearing during the weekend of 5 to 7 July and in 1931 the earlier date of 3 July was reported by W. Colley of the MV *Fifes Own* (Clarke 1932).

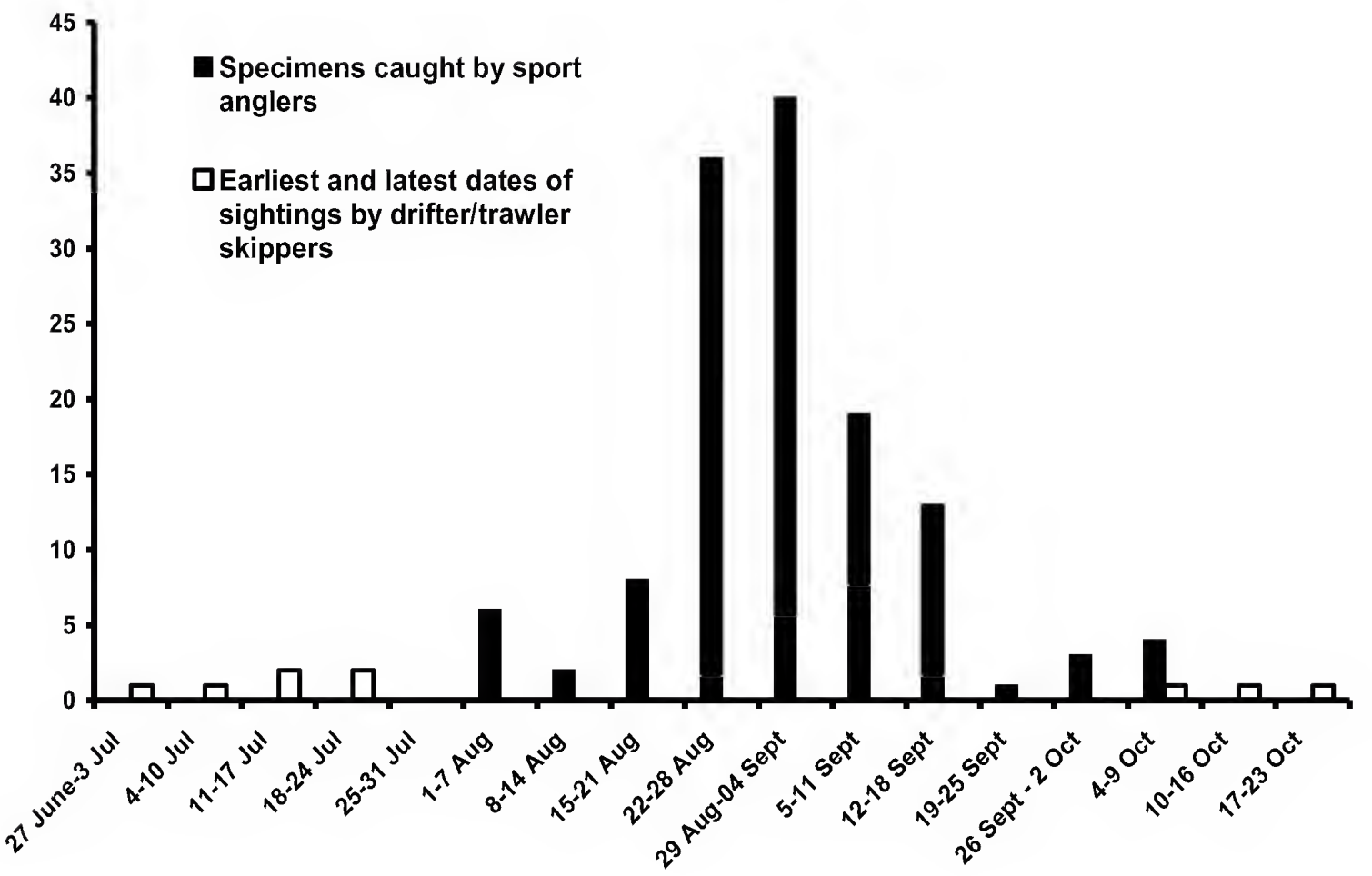

Figure 1. Seasonality of sightings and 128 dated captures off the Yorkshire coast 3 July to 18 October, counts made in 7 day periods.

Though the peak haul of specimens is shown to be from late August to early September, this is likely to be an artefact of big game anglers selectively visiting the fishing grounds when Tunny were likely to be present in numbers. It probably therefore reflects the peak of when Herring spawning migrations reach the Yorkshire coast. Similar seasonality patterns can be generated for Harbour Porpoise *Phocoena phocoena* and Minke Whale *Balaenoptera acutorostrata,* both of which target Herring shoals. Le Gall's (1927) distribution map shows that Tunny follow the Herring shoals clockwise around the British Isles, being present around the Hebrides during July, the Northern Isles through July and August then progressing down into the North Sea, entering the Cromarty and Forth sea areas through August, the Tyne sea area by September, Dogger and Humber through September and October and down to East Anglia in the Thames sea area and across to the German Bight in October. The records off East Anglia help to corroborate the early 19th century Yarmouth and Thames estuary allusions in Yarrell (1836). Heldt (1930, 1931), using a hook recovery technique, also provided preliminary evidence of seasonality in various regions, with Tunny appearing off the west coast of Ireland in July and August and in the North Sea from late July to late October.

Weight range

The 344 recorded weights ranged from 313lb (142kg) to 852lb (386kg) with a mean weight of 588.12lb (267kg) (see Figure 2). In reaching the maximum weight, the British and World rod-caught records were broken several times in quick succession (see Table 1), each record ratcheting up public interest and stoking sporting rivalries. When it was being established

that 'Giant Tunny' were indeed present off the Yorkshire coast the World Record was held by the American novelist and big game angler Zane Grey with a 758lb (345kg) fish from Nova Scotia. The dramas of challenging the World Record from the ports of Scarborough and Whitby and the heated controversy over the validity of the last two record claims are extensively covered by Berry (*loc. cit.*) and Ross (*loc. cit.*).

Table1. Sequence of Record Tunny caught off the Yorkshire coastline.

Date	Weight	Captor	Locality	Rod-caught Record
27.8.1930	560lb (254kg)	L. Mitchell-Henry	Whitby	British record
03.9.1930	630lb (286kg)	Lt. Col. R. Stapleton-Cotton	Scarborough	British record
06.9.1930	735lb (333kg)	Fred Taylor	Scarborough	British record
30. 8.1932	798lb (362kg)	Col. E.T. Peel	Scarborough	British & World record
11.9.1933	851lb (386kg)	L. Mitchell-Henry	Whitby	British & World record
16.9.1949	852lb (386kg)	John Headley-Lewis	Scarborough	British & World record

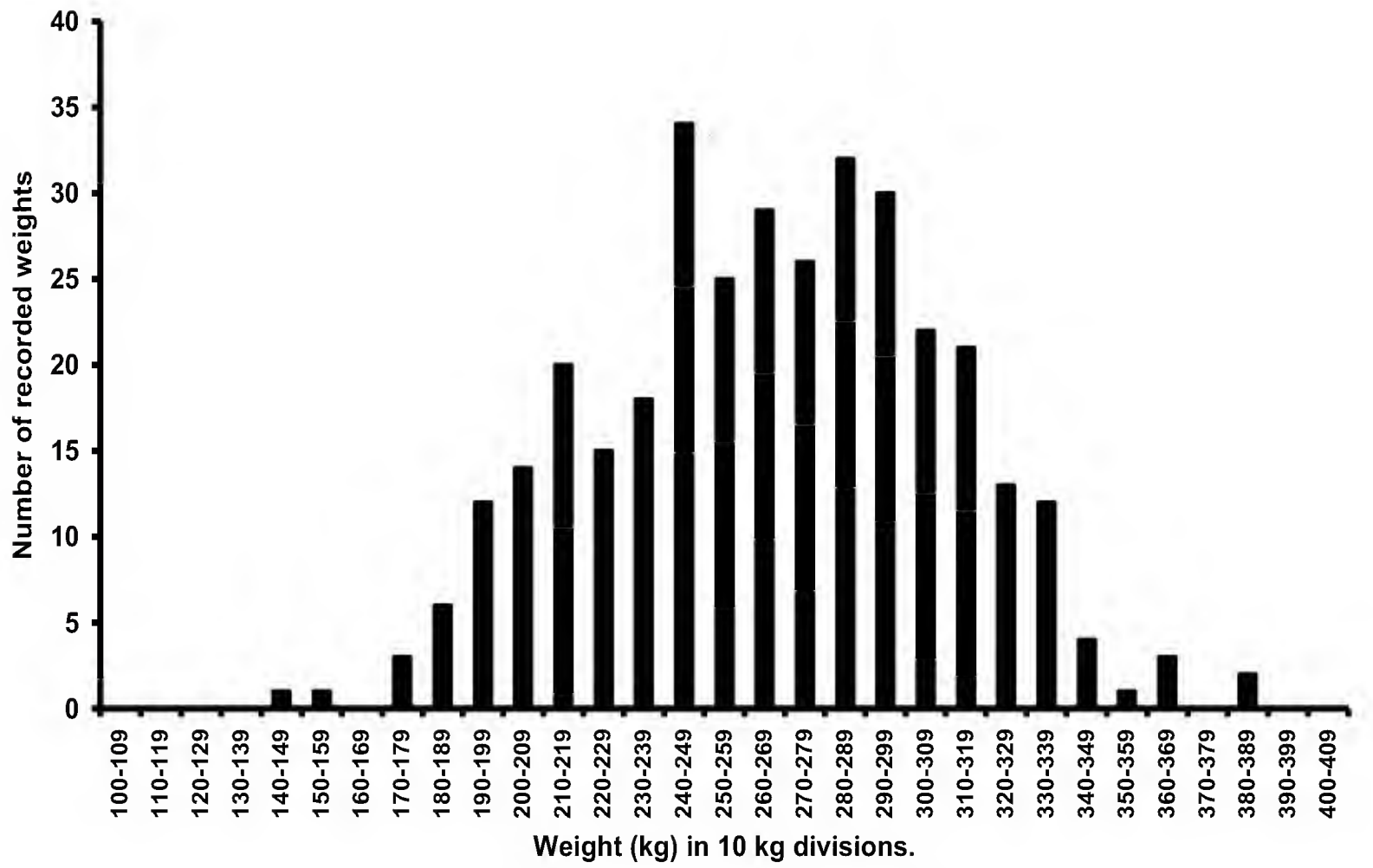

Figure 2. Distribution of weight classes of 344 rod- caught fish certified by the British Tunny Club 1930-54 in its Year Books, minutes and archives and in Russell (1934b).

Weight and Length

Of the hundreds of Tunny brought to land, apart from the all-important weight, length measurements seem to have been relatively infrequently made. Russell (1934b) took 24 length measurements for each of his 31 specimens but the sport anglers only left a record of the lengths of eleven additional specimens. Figure 3 shows the relationship between the weights and lengths (tip of snout to fork in tail) of these 42 specimens. The application of the

trend line in figure 3 may assist in estimating approximate sizes of the scores of fish for which no lengths were recorded.

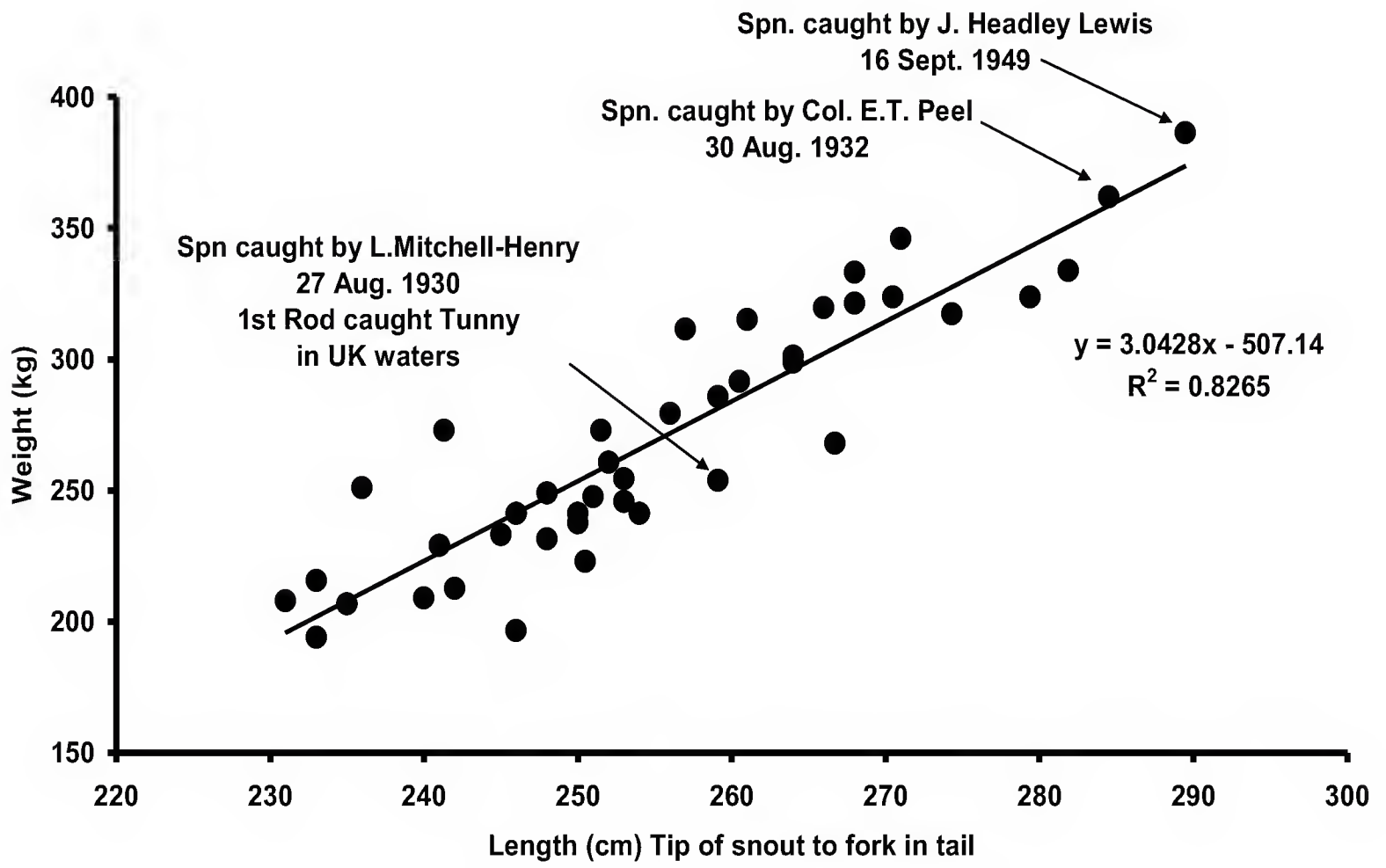

Figure 3. Relationship between weight (kg) and length (cm) of 42 Tunny specimens caught in the North Sea for which both length and weight measurements are available.

Age estimations

By sectioning vertebral centra, counting what purported to be annual growth rings and relating this to weight and length measurements, Sella (1929) created estimations of Tunny age classes. These were tabulated in Russell (1934a), allowing the prospect of estimating the age classes of the Yorkshire Tunny. Recent studies of Icelandic, Libyan, Maltese and Spanish populations collated by Rodríguez-Marín *et al.* (2004) have modified the methodology by selecting the 35th vertebra and examining growth evidence in the first spine of the dorsal fin.

By using ages within length categories as calculated by Rodríguez-Marín *et al.* (*loc. cit.*), figure 4 gives approximate estimations of age ranges of Yorkshire specimens within 25cm length categories from 230cm to 289cm. This shows the likelihood that Yorkshire migrant Tunny sampled from 1930 to 1954 ranged from 10 to 17 years of age.

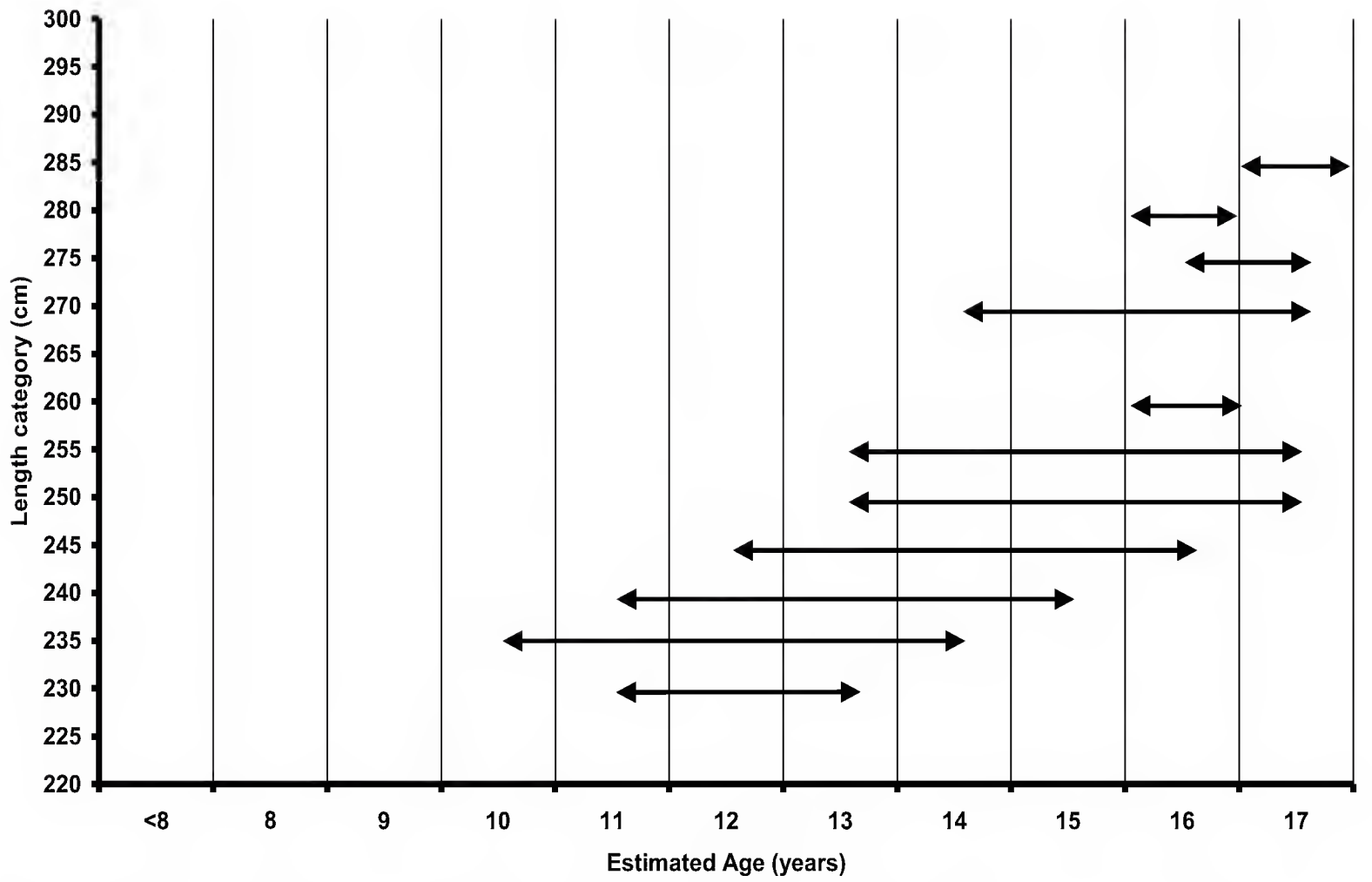

Figure 4. Estimations of age classes of Yorkshire-taken Tunny constructed from data in Rodríguez-Marín *et al.* (2004).

Possible effect of the cessation of Tunny fishing during the 2nd World War

Although commercial fishing for Tunny had not developed in the UK and according to the correspondents to Sea Angling magazines was deemed to be unsporting, in 1927, 28 and 29 large numbers of Tunny were said to have been captured off Norwegian and Danish coasts and by about 1936 a Tunny canning factory had been established in Norway (Clarke 1929). Le Gall (1927) also showed that unspecified commercial Tunny fishing was active throughout the North Sea if not fully recognised by the UK industry.

Since the annual removal of large numbers of adult Tunny was likely to affect levels of stock recruitment and would progressively reduce the older/larger element of the migratory populations, the effective cessation of commercial and sport fishing during the 2nd World War could potentially have resulted in a higher survival rate for the larger, older fish visiting Yorkshire waters. Figure 5 shows the minimum, maximum and mean annual weights of Tunny caught from 1930 to early summer 1939 and from 1946 to 1954. Of the 242 pre-war specimens, weights ranged from 153kg to 386kg with a mean weight of 263kg. After six summers of effective cessation from commercial and sport fishing the 101 post-war specimens for which weights are available, produced a mean weight of 272kg, up by just 3.6% on pre-war weights. Such a small effect possibly suggested that the pre-war commercial Tunny take had little effect on Tunny age/size composition.

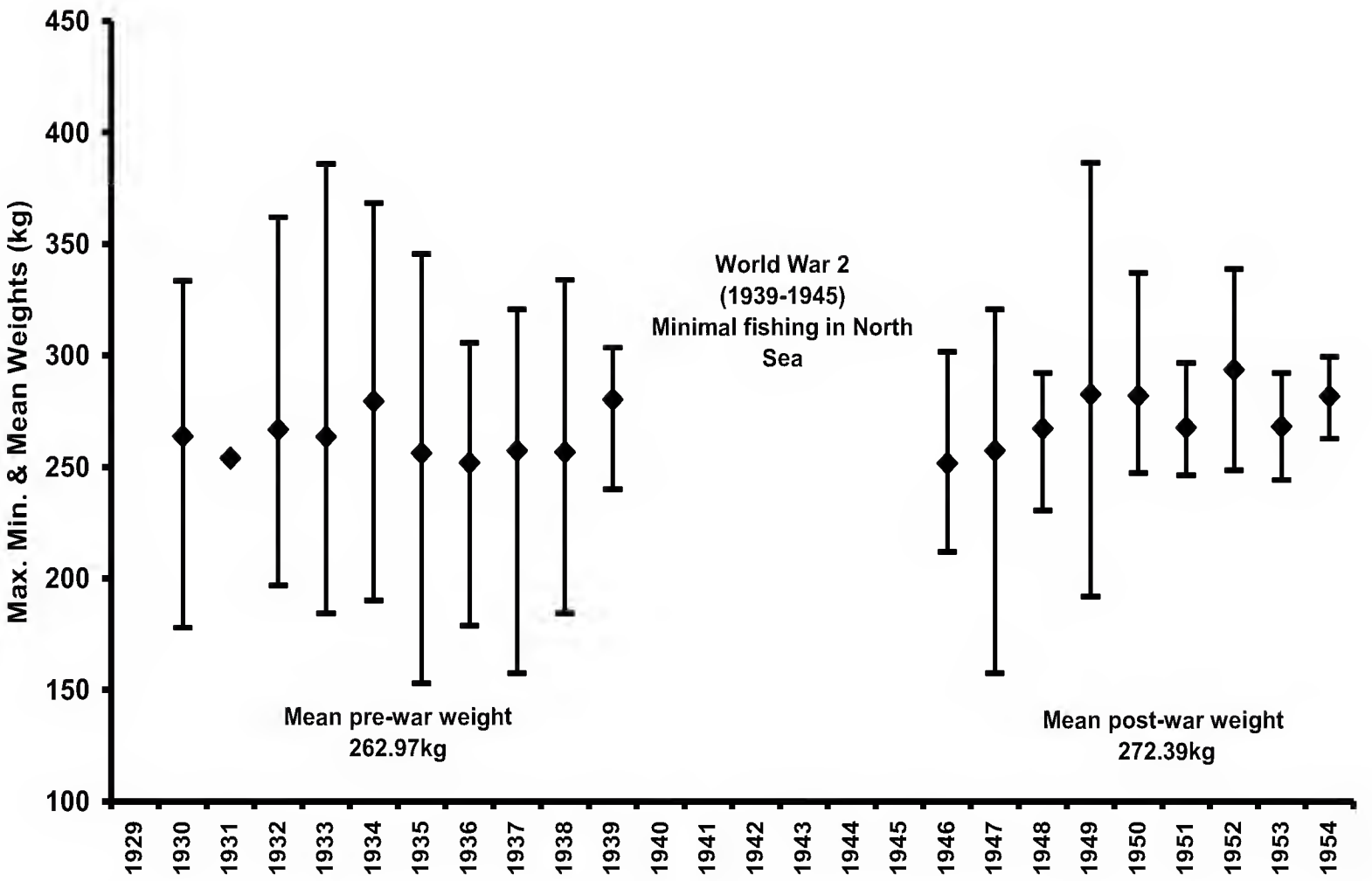

Figure 5. Maximum, minimum and mean weights (kg) per year from 1930 to 1954 and mean pre-war (1930-1939) and post war (1946-1954) weights.

Distribution

Whereas the distribution map in Le Gall (1927) showed Tunny distribution around the British Isles and throughout the North Sea, the more parochial maps provided in the British Tunny Club Year Books focused purely on the North Sea within at most a 150 mile radius of Scarborough. The approximate locations of where Tunny had been hooked under club rules since 1930 were plotted within 25 mile radii extending out to 150 miles, well across the Dogger Bank. The Year Book for 1953, which purports to include accumulated records from 1930 to 1953, gives a total count of 130 capture sites. These are separated into the six 25 mile distance zones, table 2 indicating a distribution trend. These figures can only be an approximation of the numbers of Tunny caught in each distance zone since the map legend stresses that each symbol may indicate the capture of more than one fish. Also seasons varied, Clarke (1930) noting that in September 1930 large shoals of Tunny were venturing as close as nine miles from Scarborough harbour.

Table 2. Numbers of Tunny capture sites within six 25 mile radii of Scarborough.

Miles from Scarborough	Number of sites	%
1-25	19	14.6
26-50	50	38.5
51-75	34	26.2
76-100	20	15.4
101-125	6	4.6
126-150	1	0.7

Migration

An element of Russell's (1934b) research programme was to provide tangible evidence of migration. The intention was to use a hook-recovery technique pioneered by Sella (1930 & 1931). By this means, Heldt (1930 & 1931) plotted Tunny movements within the Mediterranean, around the Iberian Peninsula, up to the Norwegian coast and into the North Sea. With the cooperation of the British Tunny Club, hooks used locally were either of an identifiable design/make (2 from Hardy's of Alnwick, 2 from Mustad of Gjörvik, Norway and one from the Scarborough firm of Pritchard [see Russell, 1934b Figures 1 & 2]) or were purposely marked with three notches, enabling them to be identified if recovered. During the 1933 Tunny fishing season, in excess of 100 hooked fish escaped capture in the region of the Dogger Banks and the Yorkshire coast and many more hooked fish were also lost in subsequent years of fishing up to 1954. Since a hooked fish had effectively been tagged, it was hoped that if these fish were re-caught at a later time or in another locality and the old hook identified, this could provide evidence of migrations, seasonal movements and age. Sadly, there were no subsequent reports of recovered Yorkshire hooks. This may have been a reflection of an absence of a UK-based commercial Tunny fishery and that the numbers of fish landed by the sport anglers may have represented too small a sample to encounter 're-traps'.

Taxidermy trophies

With the prospect of a demand for Tunny trophies, one leading taxidermy firm, Edward Gerrard & Son of 61 College Place, Camden Town, London NW1, quoted the following prices for a series of trophy options in their 1940s catalogue (Morris, 2004):

Tunny Tail mounted on an oval plaque so that the tail stands out horizontally	£6.00
Tunny Tail mounted on an oval plaque and bracket so that the tail stands upright	£6.10
Tunny Head mounted with metal hanger	£17.00
Tunny Head mounted on a shield	£20.00

Many of the numerous fish caught were photographed (see British Tunny Club archives at Wood End, Scarborough, also Berry (*loc. cit.*) and Ross (*loc. cit.*)) but few trophies or museum specimens of Yorkshire Tunny are known to have survived.

On 9 September 1929 the Steam Drifter *Ascendant* landed two Tunnies both harpooned 18 miles east-north-east of Scarborough. The skeleton of the larger one (8ft 3inch, 2.5m long) was prepared for the Zoology department at Hull University (Anon, 1929, Clarke, 1929). There was a particularly fine Tunny skeleton (provenance unknown) in the Hull Museum of Fisheries and Shipping (Hull Maritime Museum) (Anon, 1929, Clarke, 1929).

A 591lb (269kg), 8ft 9inch (2.7m) long Tunny caught by F.B. Hannam 12 miles off Scarborough in September 1930 was donated to the Natural History Museum in South Kensington (Acc. No. 2012.11.23.1 NHMUK:ecatalogue:2651012). A full body cast was made for the museum and one for the British Sea Anglers Society in Fetter Lane, London (Holcombe, 1930). The cast is still in the museum collections along with the hook, the trace and a sample of line used to catch the fish. The transport of the fresh specimen from Scarborough to London was reported in the press as follows *'Tunny Fish as Passenger*' "The LNER report that a Tunny fish weighing 591lb which was caught off Scarborough on September 9 was conveyed by

passenger train to King's Cross. The Tunny fish was destined for the Natural History Museum and is the first to be conveyed by train in this country" (Anon, 1930a).

The mounted tail from a 700lb (317kg) specimen caught on 19 August 1932, the first Tunny to be caught off Whitby, was donated to Whitby Museum by its captor L. Michell-Henry. The specimen still survives and is currently on display, accompanied by a photograph and a few samples of finlets and scales (Howes & Kroebel, in press).

The head of a 763lb (346kg) Tunny caught by Col. George Baker on 10 September 1933 was preserved and mounted on an oval oak shield with the details of the capture and award in gilt lettering. The fish was caught 25 miles off Scarborough, captor winning the British Tunny Club Paul Latham Trophy and the Hardy Cup for best fish of the year caught on rod and 54 thread line. Also associated with the specimen is a framed display containing the original invoice for £15 from Gerrards Taxidermists, two photographs with the captor and the crew of the boat and a copy of the entry in the Tunny Club Year Book. In 1964 the Trophy and associated ephemera was purchased at auction for £4,400 and exhibited at the Walter Potter Museum of Curiosities in Cornwall. In 2003 it was purchased at auction by the Victorian Taxidermy Company for just over £4,800 (Chinnery, 2004, Morris, 2004, 2008).

A Tunny caught by Col. E.T. Peel off Scarborough in 1933 was donated to the Natural History Museum. Peel's archive includes a letter of acknowledgement from C.Tate Regan, Director of the Museum, dated 14 March 1934 (Ross, *loc. cit.*). Curiously no reference of this specimen appears in the museum accession registers.

On 24 August 1933 Maurice, Lord Egerton (Baron Egerton of Tatton) landed two specimens weighing 538lb (244kg) and 639lb (290kg) respectively. Although one of them had been properly hooked, the other became ensnared by the line and had to be gaffed and landed before the hooked fish could be played and landed according to the BTC rules. The specimens were mounted and, together with the hook and coil of the wire trace, form part of his big game collection housed at Tatton Park, Knutsford, Cheshire. Since Lord Egerton traditionally used the taxidermy firm of Rowland Ward to preserve his big game trophies, it is likely that the magnificently mounted and cased fish were also examples of its work.

On the 24th of August 1934 a 743lb (337kg) Tunny was caught by T.D. Shepard 17 miles East-north-east of Scarborough, the captor receiving a British Tunny Club Certificate embossed with a Grey Seal to indicate that it had been caught on a 180lb breaking strain line. The modelled head mounted on a shield and the Tunny Club certificate are exhibited at Hazelmere Museum (Acc. No. LD.5.1279).

At a party held by the big game angler Mr H.E. Weatherley for the crews of the Scarborough Tunny boats on 26 November 1949, a mounted trophy tail was presented to Mr William Pashby, skipper of the Keel Boat '*Courage*', to celebrate the landing of the 100th Tunny on boats that he skippered. This historic event is recorded in a group photograph belonging to the Pashby family (Anon,2009, Berry, *loc. cit.* and Ross, *loc. cit.*).

A mounted tail with a plaque stating "684lb, Scarborough 1949" came up for sale at auction in 2007 (Ross, *loc. cit.*), this was from one of the five caught by R. Bradlaw that year.

Figure 6. John Headley-Lewis and the 852lb Tunny caught off Whitby 16 September 1949, photographed on the Old Pier, Scarborough Harbour. Reproduced by kind permission of Scarborough Museums Trust.

The 852lb (386kg) specimen caught off Whitby on 16 September 1949 by John Headley-Lewis (Fig. 6) won for its captor the cup for the biggest Tunny for 1949, the biggest from a boat less then 45ft (14m) long, the biggest taken by a novice and the biggest taken on Hardy's tackle. At the time it controversially held the British and World records for a rod-caught specimen caught from a rowing boat. The fish became one of the few to be fully mounted but for many years remained in store. In February 1986 it was donated to Wood End Natural History Museum by Mrs Penny Headley-Lewis, together with all the associated trophies, photographs and archives (Anon, 1986). With a grant of £2,500 from McCain Foods it was restored and a fibreglass cast was made, these forming the centrepiece of a Tunny exhibition at the now-closed Wood End Natural History Museum.

The Natural History Museum Ichthyology Accession Register for 1937-1960 p.132. indicates the donation of two Tunny ? Skull dry (indecipherable) on 8 October 1951 by Mr T.C. Cormach Deputy Health Inspector, Fish Dock, Grimsby (Acc. No. 1951.8.10.2 NHMUK: ecatalogue: 2521543). Though no provenance was given, since they were donated from Grimsby fish docks it is assumed that they originated from fishing vessels working in the North Sea.

The last splash

The termination of Tunny fishing off the Yorkshire coast after 1954 and the resultant demise of the British Tunny Club seem to have been a reaction on behalf of the big game sea fishing anglers rather than due to an absence of Tunny. Whitaker (1971), through his close connections with the fishing industry, remarked that commercial Tunny fishing operations in the North Sea, conducted by Norwegian and German boats, still reaped a rich reward and that Tunny were still to be found off the Yorkshire coast, being reported most years by the Herring drifters.

However, the annual commercial Herring take from the early 1960s to the late 1970s was calculated to be well in excess of levels the Herring could replace and stocks collapsed dramatically, reaching a nadir in 1978. This led to a moratorium on directed Herring fishing in the North Sea from 1977 to 1980. Until that time there had been no control other than market forces on the catches of North Sea Herring (Nichols, 1999, http://www.cefas.co.uk). It is therefore likely that seasonal visits by Tunny attending the North Sea Herring shoals would have petered out during the 1970s.

Tunny continued to be present off the south-western and western coasts of the British Isles from the 1960s. Tunny have been caught, seen and stranded off the Cornish and Devon coasts from 1968 to the present. During the same period fish have been caught off the western coast of Ireland from Cork to Donegal. A 529lb (240kg) specimen caught in September 2000 set a new Irish rod-caught record and instigated what has become a thriving recreational Tunny fishery. Between 2000 and the end of 2004 there had been 74 rod-caught fish including a 968lb (439kg) specimen which broke the Irish and European records (http://www.fishinginireland.info/sea/bluefin_tuna_fishing2003.htm.) Irish fish were also being caught commercially, one notable specimen weighing 1,248lb (566kg). Fish were caught commercially off north-west Scotland from the 1960s to the 1980s with sightings from the Hebrides off St Kilda in 2012 and a 9ft (2.7m), 515lb (234kg) rod-caught specimen taken off Harris in 2013.

In 2004 three Irish Tunny were successfully tagged and released with pop-up archival transmitting tags. Two tags deployed off Donegal in September 2004 reported *c.*6 months later, one from close to the Bahamas in the western Atlantic and the other south west of Portugal in the eastern Atlantic. A third fish tagged off Donegal in October 2004 was captured 8 months later in the Mediterranean Sea, south-west of Malta (Cosgrove *et al.*, 2008).

The highly migratory nature of these fish suggests that if Mackerel and Herring stocks continue to recover in the North Sea, shoals of Tunny may again regularly visit Yorkshire coastal waters. Indeed, two anglers off Whitby hooked huge and powerful fish thought to be Tunny, each of which stripped at least 500 yards (450m) of line before escaping in summer 1999. In August that year large fish, possibly Tunny, were seen attacking shoals of Mackerel at the surface off Bridlington and Scarborough:
(http://www.spearblog.com/2011/07/20/tuna-fishing-in-united-kingdom/).

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Firstly, I am grateful to my late parents for taking me as a child to see the Tunny and other curious marine creatures in the Tunny Club 'Hut' at Scarborough Harbour in the early 1950s. For this study particular thanks are due to the late Ian Massey, former curator of Wood End Natural History Museum, and to Karen Snowden of the Scarborough Museum's Trust for allowing me to examine the British Tunny Club year books, press cuttings, photograph albums and miscellaneous archives housed at Wood End. I am grateful to the Scarborough Museums Trust for granting permission to reproduce the photograph of John Headley-Lewis and his 852lb (386kg) Tunny from the Trust's collections and would like to thank Jennifer Dunne, Collections Manager, for making this possible. James Maclaine, Curator of Fish at the Natural History Museum, London, kindly confirmed Yorkshire specimens in the national

collection. Doncaster Museum provided access to runs of *The Naturalist*. Martin Limbert provided references to taxidermy literature and the press references to Tunny being transported by train. Finally, this little project is a tribute to the pioneering investigations by Frederick Stratton Russell (1897-1984). He was elected Fellow of the Royal Society in 1938, became director of the Marine Biological Association in 1945 and was later knighted for his contributions to Marine Biology.

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An unusual Tansy *Tanacetum vulgare* plant at Newton-on-Ouse, North Yorkshire

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Tansy *Tanacetum vulgare* is a widespread species in the British Isles (BSBI, 2016) and is particularly abundant along stretches of the Yorkshire Ouse, where it serves as the major food plant for the endangered Tansy Beetle *Chrysolina graminis* (Oxford *et al*. 2003). In August 2015, while surveying for Tansy Beetles, a Tansy plant with a curious morphology was discovered near Newton-on-Ouse (SE513588). The plant comprised 21 flowering stems emerging from what seemed to be a single root-stock. It was growing next to a patch of normal Tansy and was of identical height (approx. 120 cm).

The unusual plant differed from normal Tansy in three obvious ways.

The Tansy flower head usually comprises a number of main flower stalks, which sub-divide into eight to 10 secondary or tertiary stalks each of which bears a single, button-like inflorescence (Fig. 1). The whole head forms a corymb. The unusual plant bore a single, large capitulum, about 20 mm in diameter, on each primary/secondary stalk (Plate 5). The primary flower stalks arising from the main stem seemed normal but the secondary branches were reduced in number or absent altogether (compare Figs. 1 and 2)

The capitulum had peripheral florets that possessed short, stubby yellow rays with fimbriate (split) ends (Plate 5, centre pages, inset). The rays were about 4 mm long, approximately one fifth the diameter of the disc.

The leaves of the plant were identical in structure to those of normal Tansy, pinnately lobed, but the constituent lobes were thinner ('skinnier').

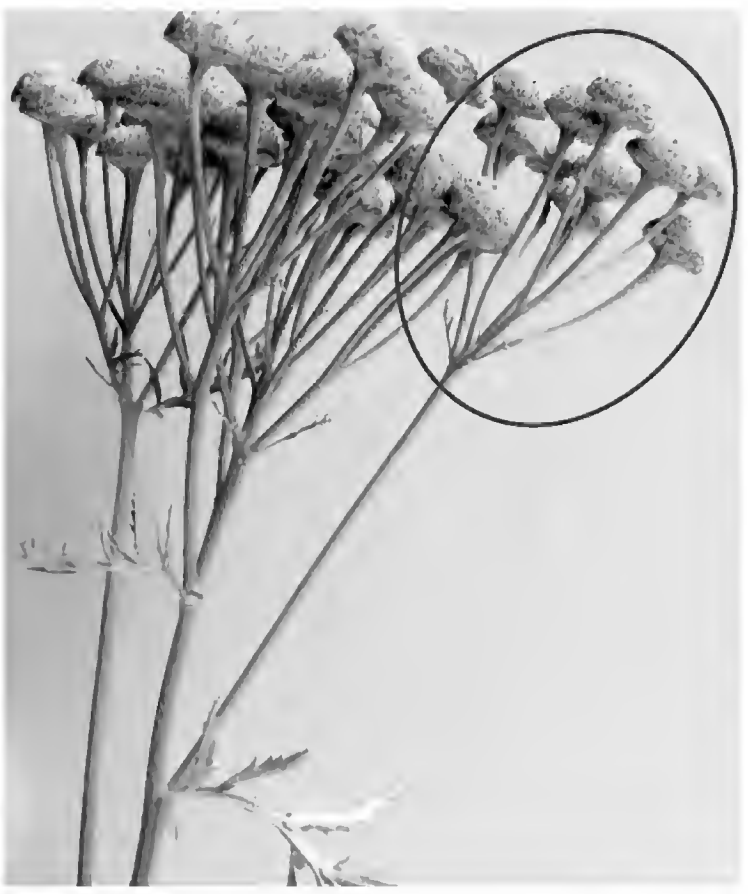

Fig. 1. (left) A normal Tansy flower head showing the numerous secondary/tertiary flower stems that lead to the formation of a corymb element (oval). (Photo: Geoff Oxford)
Fig. 2. (right) The mutant Tansy flower head in seed, with secondary flower stems reduced or absent. Note also the 'skinny' leaves. (Photo: Geoff Oxford)

There is an uncommon Rayed Tansy in Britain, *T. macrophyllum*, which has been recorded at three locations in Yorkshire: Jervaulx Abbey tetrad SE18S (naturalised since 1912 - Blamey, Fitter & Fitter, 2003); near Husthwaite, tetrad SE57C; and in hectad SE38 (the last two locations recorded since 2010) (BSBI, 2016b). However this species has white rays (like Feverfew *Tanacetum parthenium*) which, in length, appear to be about half the diameter of the central disc (from drawing in Blamey *et al.* 2003). The leaf shape is also different from that of the Newton-on-Ouse plant although the branching of the flower stems might be similar (from drawing in Blamey *et al.* 2003); these plants need to be compared 'in the flesh' to be sure. Radiate Tansy has been described from North America, where the plant is invasive, but there is no mention of the single inflorescence per flower stalk which characterises the Newton-on-Ouse plant. There are no records in Britain of *Tanacetum* hybrids (Stace, Preston & Pearman, 2015). (See USDA Forest Service (2016) for a review of Tansy in North America).

It seems likely that this unusual Tansy is a mutant. Mutations that convert multiple flower stems into a single stem are well characterised in maize (e.g. Doebley, Stec & Hubbard, 1997) and, as mentioned, the Newton-on-Ouse plant appears to be similar to *T. macrophyllum* in this respect. If the secondary/tertiary stems of the corymb fail to divide during flower development the result would be one stem with a single, large inflorescence – essentially the

normal, individual button-like flowers of a corymb element rolled into one. The florets of normal Tansy are hermaphrodite except for the outermost ring, which are female only. The rudiments of rays are present in these outer florets but are not obvious. Clapham, Tutin & Warburg (1964: 395) state that they are '... with so short a ligule as to appear tubular and like the disc florets'. Indeed, floras often describe the Tansy flower as 'rayless' (e.g. Fitter, Fitter & Blamey, 1974) or 'without ray-florets' (e.g. Rose, 1981). The large size of the mutant inflorescence may enhance the expression of the rays, perhaps as a result of their differential (allometric) growth. The 'skinny' leaves could be an incidental, pleiotropic expression of the developmental mutation. They are aromatic and similar in smell to the normal Tansy growing alongside.

Reference material from the unusual Tansy has been lodged at the Yorkshire Museum with accession number YORYM : 2016.57.

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The Washburn Valley and its birds

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I have been undertaking regular long walks in the Washburn Valley north of Otley since 1997, both to observe and catalogue the birdlife and to ensure I get some regular exercise. When I started I entertained the hope that I would be able to observe bird trends over time and draw appropriate conclusions. In this respect I have certainly not been disappointed!

The basis of these walks is three regular routes which cover most of the length of this intimate dale and ensure that I am covering virtually all the main habitats, from valley bottom up to heather moors. I have to accept that many people find it understandably amusing that I have done the upper valley walk 102 times, the middle valley 164 times and the lower valley walk 162 times. The truth is that the more time has passed the more I enjoy the walks, not least because I think the Washburn is both a beautiful place and, given the lack of a road running up the valley bottom, very peaceful and quiet – at times it feels like I have the place to myself! In addition, as you might expect, I have succeeded in my original vision of developing an intimate knowledge of what has been happening to the birdlife of the valley with my instinct backed up by detailed computerised records going all the way back to the first walks. The numbers of birds noted for these records would be reasonably accurate for the low number counts but, of course, only guesstimates for the larger numbers, given that I do not usually have the time or the will to accurately count the numbers of such prolific species as corvids and geese! My numbers, by the way, include birds only heard and I could not over-stress the importance of knowing your bird songs and calls for a study of this nature.

Even though I say so myself, there have been some very clear trends that have emerged from my data that have led me to conclude that some significant changes have been taking place and I am reinforced in this belief by comparing my conclusions with national trends, particularly the Breeding Bird Survey which has been run by the British Trust for Ornithology since 1995. In fact, so similar are many of the conclusions that I occasionally treat myself to a little chuckle by thinking that the BTO could have spared itself and its volunteers a lot of effort by just relying on my data which I would be happy to provide free of charge! Not a serious comment I hasten to add, but it is very reassuring to see that my observations, which I accept would not withstand rigorous scientific scrutiny, are nonetheless pointing in the right direction by and large. I should also say that I am not unduly surprised by some of the downward trends, not least because I have observed from my walks a variety of farmland 'improvements', particularly regarding the drainage of wet areas to create grass monocultures or cereal crops. This is consistent with what has generally been happening in the Dales where there has been a massive loss of hay meadows since the Second World War. Because this has happened gradually we tend to think of the current local landscapes as quintessentially Yorkshire Dales whereas in truth they are nothing like as biologically rich as they used to be and the Washburn has not been immune from this trend. Ironic isn't it that we are now trying to recreate hay meadows!

So which birds are up and which are down? The rest of this article gives my own general Washburn observations on selected ones and compares them with, in brackets, the Breeding Bird Survey (BBS) trend for England based on the period 1995 to 2014. I begin with the positive news about some of those birds which are increasing.

Population Increases

Red Kite (over 10,000%!) and **Common Buzzard** (+172%) populations have both increased exponentially – it is amazing to think that my first Washburn Red Kite was in 2003 and my first Buzzard in 1995. The reasons behind the Red Kite increase are well known but the Buzzard is less obvious, although one explanation is connected to the increase in the Rabbit population as immunity to myxomatosis has developed.

Pheasant (+31% but over twice that in Yorkshire) are now worryingly prevalent in the valley. There has undoubtedly been a large increase. Whilst the pheasant rearing interests have provided some useful habitats, the impact on biomass in the valley must be of considerable significance and is highly likely to be detrimental.

Curlew and **Lapwing** are both in decline in the UK (BBS -46% and -45% respectively) and yet there is no statistically significant decline in Yorkshire. My observations thankfully mirror this trend. It may be that the loss of wetlands has mainly been in the lowlands, linked to agricultural intensification that has driven this decline, whereas most of the breeding habitat for these birds in the Washburn is moorland and its fringe habitats with which Yorkshire is relatively well endowed.

Jackdaw numbers (+42%) are clearly higher, based on general observation, although my figures have only ever been guesstimates, given the numbers involved. I am unable to express an opinion about whether this increase could be generally disadvantageous for other birds except to note that two reliable Little Owl tree nesting holes are now occupied by Jackdaws. Nonetheless, their cheerful calling on a winter walk is a welcome relief from the general silence. **Carrion Crow** (+24%) does seem to be very prevalent now although less so on the grouse moors, for perhaps obvious reasons.

Blackcap (+115%) and **Chiffchaff** (+90%) numbers have clearly increased over the years from my figures. These are short distance migrants that generally stop short of trying to cross the Sahara, wintering in North Africa or Southern Europe, and it is thought that this shorter migration has helped them thrive. **Willow Warbler**, although declining by -37% in England, is holding its population numbers up in Yorkshire (BBS again), though my figures would suggest a consistent shallow decline.

Common Redstart (+27%) is as common as ever with the Washburn certainly being a stronghold. The reasons for this are not entirely clear except to say that the nesting success rate has improved.

Song Thrush (+10%) are clearly doing well in the valley with numbers undoubtedly having increased from a dearth in the lean drought years of the mid 1990s. This bird needs damper

ground to thrive as it brings their food supplies such as worms, snails and slugs to the surface.

I had no record of **Tree Sparrow** (+77%) in the Washburn until 2003 but it is now reliably seen where bird feeders are used. It is undoubtedly bouncing back after a catastrophic decline largely caused by agricultural intensification and it may be that this latest trend is linked to them learning to use bird feeders to get them through the difficult winter period.

Grey Wagtail (-5% but not statistically significant) are thriving in the valley, probably linked to milder winters, although a population dip has always been noticeable in the breeding season after a long winter cold spell.

Goldfinch (+106%) is very obviously more common now. There is a study underway to see if this is perhaps linked to the greater availability of garden feeding.

Now for the bad news – and there is rather too much of it.

Population Decreases

Grey Partridge (-55%) is way down in the Washburn to the extent that I struggle to get it on to my year list. Whilst the valley would probably never have been a stronghold for this bird, the decline is very marked.

Common Sandpiper (-36%) is also somewhat reduced by my records but the reasons for this decline have yet to be explained. In the Washburn the occasional rapidly fluctuating water level of the reservoirs cannot be helping, given their liking for nesting on the stony shores.

Cuckoo (-68%) is certainly in decline in the Washburn with fewer sightings year on year. It seems to be hanging on in the moorland fringes. Reasons for this decline are not clearly established but climate change and the perils of migration and problems in the wintering areas may be part of the explanation.

Little Owl (-55%) is an introduced bird that appears to have filled an environmental niche without harming other species. My records show a substantial decline even in excess of the BBS outcome. Whilst agricultural intensification is probably the main culprit, the cold winter snaps we experienced several years ago did seem to have a marked negative effect.

Swift (-41%) and **House Martin** (-27%) are clearly declining in the valley and in both cases I wonder if in my lifetime I might fail to see them in a Washburn year. I am also concerned about the **Swallow** (+27%), where the Washburn picture appears to me to be one of decline but the BBS stats for England say otherwise. I cannot begin to explain this.

Rook (-13%) is an enigma. Why is it declining when other corvids are increasing? My observations certainly support the BBS trend.

Whinchat (-38%) is now almost extinct in the valley as a breeding bird. It was never common in my time though I knew where to find them, but sadly no longer. I do occasionally still see

passage birds, mainly on the moor edges and more likely on the return than the arrival. Whilst there is no simple explanation, research does suggest that agricultural intensification is a significant factor.

Spotted Flycatcher (-61%) is hanging on in several Washburn locations but the mirroring of the national trend is clear. Again there is no simple reason but problems on migration or the wintering grounds may well be significant in this case.

Starling (-60%) numbers are definitely reduced, at least regarding the breeding season. Productivity per nest has increased but the number of nests and the first year survival rate have both declined. This is a Europe-wide problem and, whilst agricultural intensification looks to be part of the answer, other factors are likely to be in play.

Linnet (-27%) is declining by a similar amount by my records and it is getting really difficult to come across during the breeding season. Agricultural intensification is again almost certainly largely responsible with, for example, a decline in the quality of hedgerow nest sites leaving Linnet more open to predation.

Greenfinch (-29%) is clearly down, thought largely to be due to the spread of the disease trichomonosis. It is most often seen in the Washburn around bird feeders - surprisingly few houses in the valley have them but where they do they are a magnet. The irony is that trichomonosis is commonly spread via contamination of feeding stations!

One other trend is revealed from my statistics, namely that the number of species seen/heard per walk has been going down in the last few years. This should perhaps not be surprising given that the 'State of Nature Report', produced online by the RSPB and other conservation organisations, estimated that the number of breeding birds in the UK fell by some 44 million between the 1960s and 2012!

In summary, the Washburn Valley remains for the moment a wonderful place for watching birds but it is certainly not immune from wider bird population trends. As each generation passes we lose our collective memory of what it used to be like and think that what we are seeing is the norm which is, of course, far from the truth. Surveys like the Breeding Bird Survey help to mitigate this effect and, for my part, to see for myself the changes taking place on the ground, even though for only some twenty years, has been a salutary and fascinating experience. Whilst not optimistic I can only hope that eventually we will grasp the nettle and work to make our environment more wildlife friendly. In the meantime what we have has been a source of tremendous pleasure to me as well as a wonderful way to exercise!

The end of the Hull Valley Wildlife Group

Peter Drury (chairman)
Email: petergdrury44@gmail.com

Almost 40 years of wildlife recording and reporting at Tophill Low and the wider River Hull valley by the Hull Valley Wildlife Group (HVWG) and its precursors have come to an end with its eventual demise in June 2015. A number of circumstances have combined to reduce interest in the group and it was obvious that it had run its course and it was time to close and say goodbye. Our running costs had become greater than our income and, in order to ensure that our assets were put to best use, we decided that we should donate them to suitable conservation organisations (namely Yorkshire Naturalists' Union and the Yorkshire Branch of Butterfly Conservation) before they were whittled away, over time, to nothing.

In 1975 a small band of birders formed a Hide Committee to organise the funding and building of the first hide at Tophill Low (TL). More hides and screens followed, all funded and built by Permit Holders (group members). In recent years hide building and funding have been taken over by Yorkshire Water (YW).

Manning disputes due to the introduction of shift work, etc., in 1977 meant that YW staff would no longer vet entry permits and sign TL visitors into the site, so the Tophill Low Natural History Advisory Committee was formed, with the blessing of YW, to take over these activities and to voluntarily warden the site. By the 1980s and 90s the Tophill Low Wildlife Group had been formed to issue permits and warden the site, again all voluntarily. The Reserve was totally managed by Group volunteers from the 1970s to 1992.

1981 saw the production of the first Annual Wildlife Report, though in the early years it consisted mainly of the birds of TL. The last HVWG Annual Wildlife Report was produced for the year 2010, a casualty of the lack of income over expenses.

In 1992 the first official (paid) warden was appointed to help a band of Group member volunteers. In 1993 the site, renamed Tophill Low Nature Reserve, was opened to the public and YW requested that the group name be changed to avoid confusion with the name of the nature reserve (YW having adopted our Green Sandpiper logo as its own) and so we became the Hull Valley Wildlife Group. The Group still controlled TL Permits (memberships) until the 2010s when YW took over complete control. The inception of the HVWG did, however, have a beneficial effect as it gave itself the recording of fauna beyond TL, together with the opportunity to become involved in conservation as well as fighting for wildlife causes in the area, though this would prove onerous as time passed.

In the 2010s, YW again took over the issue of permits, causing a catastrophic fall in the Group's membership base and, therefore, income. Previously, members of HVWG paid £25 for annual membership, which gave them an annual permit to TL and also access to a private bird hide which overlooked Hornsea Mere. Out of the £25, HVWG had to forward £20 to YW and the remaining £5 was kept by HVWG to cover the insurance and maintenance of the bird

hide and any administrative expenses incurred by the group. Once standing at over 400 annual permit holders (members) we were reduced to 18 members in 2015. Coupled with this, the advent of wildlife recording software on home computers meant that members had no need to funnel their records through HVWG. Support fell away; the last AGM was not held due to the failure to attract a quorum, as apart from the committee only two members attended. This, and the lack of new faces volunteering for the committee, meant that the task of running the Hull Valley Wildlife Group was not deemed viable and the group was disbanded.

Acknowledgement
Thanks are due to Roy Lyon for supplying the historical information.

Book review

Minibeast Magic – How to catch invertebrates with tricks and treats by **Roma Oxford** 2015. Paperback, pp61. Published by The Royal Entomological Society, London

This is a revised edition of *Minibeast Magic*, originally published with sponsorship from the Yorkshire Wildlife Trust in 1999. The book is aimed at children of school age and provides them with a wide variety of techniques for catching and observing invertebrates. For each technique a list of required equipment is given and, in many cases, how it can be made from cheap, everyday household items. In addition, to assist with identification, there are drawings of the main invertebrate types likely to be encountered, a glossary of terms, guidance on health and safety (of both child and invertebrate!) and a list of further reading. Younger age groups will certainly need adult supervision and the book makes clear when older children will require assistance.

The book is written in a chatty, conversational style likely to help engage children. There are copious delightful illustrations in the form of monochrome and coloured drawings by the talented Anna Sutton. Some of the instructions, together with hints for what to look out for and occasional questions that might be asked (a useful introduction to scientific inquiry), are in the form of speech bubbles, sometimes emanating from the invertebrates! Each technique is given a double page spread with an attractive balance of text and graphics.

Naturalists frequently worry where the next generation of their kind is going to come from. At the same time there is increasing concern about the health of children, affected in no small part by the amount of time they now spend indoors glued to the screen of some kind of electronic device. This book responds to both challenges by providing ways of encouraging children to get outside and engage with the natural world. It does this by highlighting the diversity and fascination of the invertebrate world through detailing fun and practical ways of catching and observing 'minibeasts'. The book is undoubtedly an ideal gift for a child showing incipient signs of interest in the magical miniature world of invertebrates.

AM

Obituary: John Cudworth 1927 to 2016

John was born on 5 July 1927, the only child of Arnold and Ivy Cudworth of Prospect Road, Ossett, where, after losing his parents in the 1960s, he continued to live alone until 1999. Educated at Wakefield Grammar School, he was an enthusiastic rugby player, an activity seemingly at odds with his eventual quiet, unassuming and gentlemanly character. He progressed to Leeds School of Architecture, followed by two years National Service in the Royal Air Force, attaining the rank of corporal. On returning home he secured a post in the architectural department of firstly the West Riding County Council and later the Wakefield Metropolitan District Council, where he continued working until taking early retirement in 1980.

He joined the Wakefield Naturalists' Society in the late 1940s and was soon appointed its Ornithological Section leader. It was during this time that he developed his passion for counting flying birds, submitting notes on a movement of Yellow Wagtails *Motacilla flava* in the Calder Valley on eight evenings in September 1953 as they flew over to a roost. Joining the Yorkshire Naturalists' Union (YNU) in 1948, he was to become a frequent visitor to the then infant Spurn Bird Observatory under the watchful eyes of Ralph Chislett and George Ainsworth.

He never learnt to drive a car claiming that his desire to look for birds at all times would make it too dangerous. His journeys to Spurn every weekend, therefore, entailed catching a bus after work on Fridays from Wakefield to Ossett, a bus from Ossett to Leeds, a train from Leeds to Hull and, finally, a taxi from Hull to Kilnsea, always accompanied by his inseparable rucksack. In time he would be given lifts by friends who had also become regular visitors to Spurn. His visits in the early 1950s were the start of an association with the observatory that lasted for 50 years. He was elected to the observatory committee and, following the death of Ralph Chislett in 1963, became its Chairman, a position he held until developing a progressive debilitating illness in 1999, when he retired from office. Shortly afterwards he was admitted to a care home where he stayed for two years before returning to Prospect Road but, unfortunately, was unable to manage and so entered the home in which he was to remain until his death. Although never officially diagnosed as such, he firmly believed his problem was the result of Lyme's disease contracted on visits to Texas and Arizona.

One remembers him as a lone figure standing at Spurn's 'Narrow Neck' in the small, waist-high wooden shelter known as 'Cudworth's Castle' or, in the early days, lying on his back looking out to sea with a Broadhirst and Clarkson four-draw brass telescope propped on one raised knee. If the weather allowed, he often wore shorts but, whatever the weather, he regularly wore a large wax jacket, even in tropical Africa, claiming that he needed all the pockets for his various camera accessories that always included a light meter, his notebooks

and other bits and pieces. He took copious notes of every bird that passed along the peninsula; some examples of his vigils at the 'Narrows' during the 1970s and 1980s include: September 1978 when he counted 30,600 Meadow Pipits *Anthus pratensis* passing south during the month and some daily maxima of 9,000 on 19 September 1979 and 9,400 on 18 September 1980, with no fewer than 43,675 during September 1983. These examples are just a fraction of the wealth of information in his many notebooks on visible migration at this unique location covering a period of 30 years, something which will never again be repeated and it is surely a tragedy that the data were never analysed and published in a national journal.

During the 1960s he made several visits to Sweden and Iceland with 'Bob' Dickens and Henry Bunce, later becoming very well-travelled, visiting North America, Africa (his favourite continent to which he returned on numerous occasions), Cyprus, the Middle East and many European countries. His addiction to making a note of everything that moved was indulged wherever he travelled; he accompanied me on safaris to South Africa in 1983, Kenya in 1994 and Uganda in 1996 when the roll call, which I conducted each evening, was regularly delayed whilst he referred to his notebook and counted sightings of each species.

The evening ritual of the roll call in the Warren Cottage common room at Spurn, over which he presided with an air of quiet expectation for many years was a master class in how to record the day's sightings. Never hurried, each species being called and recorded after a general consensus by those present. Any contribution from a new, unknown face, which was obviously seasonally or numerically dubious, was received with diplomatic silence followed by an entry in the log book which was his own assessment of the particular species, before moving on without comment. Attending the roll call in those seemingly far off days was something one simply had to do and was usually a pleasant gathering from which everyone learned a little something, but is now, regrettably, a thing of the past.

I first met 'Cuddy' at Spurn in 1951 and we were to become good friends. He was the YNU's Ornithological Recorder for VC63 from 1960 to 1969 and regularly attended Recorders' meetings at my house where, at the end of the day, his domesticity invariably led him to help out at the kitchen sink. He also served on the YNU Bird Protection Committee from 1957 to 1962 and was, for thirty years, the Wetland Bird Survey (WeBS) co-ordinator for West Yorkshire. His skill in technical drawing was well illustrated with two sketches of the Stilt Sandpiper *Micropalama himantopus* at Easington Lagoons on 31 August 1954, the first for the British Isles, published in *British Birds* 1955, plate 32. He co-authored, with Brian S. Pashby, a paper on 'The Fulmar Wreck of 1962' in *British Birds* 1969, pp.97-109 and contributed a chapter on the history and development of Spurn Bird Observatory in my *Birds of Yorkshire* 1986 pp.37-40.

An avid letter writer, always with a fountain pen, he regularly corresponded with many people at home and abroad on matters ornithological. He never owned a television set nor, for many years, a refrigerator and shunned the technological age, 'emails' being quite foreign to him. His library consisted of almost a thousand books on natural history. A keen photographer, he amassed a vast collection of colour slides, most of which, because of his

reluctance to speak in public, never saw the light of day. He was a very private man, kind and helpful, commanding a great deal of respect from fellow naturalists, both young and old.

His unfortunate withdrawal from active involvement in the County scene in 1999, meant that during the last years of his life he was sadly unknown to the younger generation. The tremendous amount of work he undertook as a recorder, ringer and example to all for so many years that made Spurn Bird Observatory so successful, and with which his name was synonymous, cannot be overstated. He died peacefully at the care home on 18 January 2016 and his funeral took place at Wakefield Crematorium attended by just 24 senior friends and colleagues. With his passing, Yorkshire lost one of its most important and dedicated ornithologists, whose potential was never fully realised and the like of which we will never see again.

I am indebted to David Proctor of Wakefield, who researched John's early life and supplied much invaluable information.

John R. Mather BEM

Book review

Field Guide to the Bees of Great Britain and Ireland by **Steven Falk** with illustrations by **Richard Lewington**. Pp. 432, with colour plates, coloured and line drawings, map distributions and comprehensive identification keys. HB: ISBN 978-1-910389-02-7. £50. PB: ISBN 978-1-910389-03-4. £35. Bloomsbury Publishing.

This is the book to have for a complete study of bees of all species of Great Britain, Ireland and the Channel Islands, although microscopic study is necessary to distinguish between some of them.

Keys are provided to the identification of genera and species, with colour and line pictures and appropriate figures of characters. The photographs and drawings are closely associated with the keys, making the identification characters readily appreciated. Each species account contains information on adult size, colouration with sexual and individual variations, flight season, habitats where found, flowers visited, nesting habits, status and distribution with a distribution map, parasites and other associated species. Colour photographs of most bees in their natural habitat are also included. There is reference to Steven Falk's Flickr website where many more colour photos of (usually live) bees are available. A list is provided of scientific names with English names suggested for each species.

Richard Lewington's coloured drawings occur throughout the book and are collected together in the centre pages. They are mainly dorsal views of whole insects although sometimes the wings and legs are not included.

The first 50 pages of introduction deal with the classification of bees, species variations, life cycles including those of social insects, foraging behaviour, flight periods, cleptoparasites,

mating (even some genetics), enemies and other associated species and habitats where found (illustrated with colour photos). Field techniques of finding, collecting and recording, rearing bees, killing, mounting and storage of specimens including the necessary equipment are all described thoroughly. A final section covers conservation, useful addresses and websites, a guide to the use of keys, some bee anatomy, further reading titles and a glossary. All-in-all this is a very full and detailed introduction. Perhaps the structure of the male genitalia could have been included in the anatomy section.

As a person brought up on the book by Saunders written in 1896 and the papers of Perkins this is the book I have really wished for. It should give an important push to extend the study of bees particularly because of their importance as pollinators.

MEA

Excursion Circulars 2016

Circular No. 895

Divisional secretary VC65: Terry Whitaker 4 Crowtrees, Low Bentham Via Lancaster LA2 7EE, Tel: 01524 262269 Email: t.whitaker1@btinternet.com

The VC65 meeting will be to **Marrick Park, Swaledale** on **Saturday 14th May 2016.**

The YNU Moth Group is invited to trap on the Friday night. Generators/batteries will be required at most locations.

Maps: 1:25,000; Explorer OL30 Yorkshire Dales Northern & Central Areas.

Meeting place: Marrick Park (SE091981); Limited parking, turn through gateway on the right as soon as the house gates are reached and park tightly in the agricultural yard.

Reporting meeting: 16:00 Marrick Park, Gymnasium. Tea and coffee will be available for a small charge.

The area: Marrick Park Estate is a large, privately owned estate on the northern side of lower Swaledale where Mrs Julia Carr breeds and shows prize-winning highland cattle. She took over ownership about ten years ago and has been trying to run the farm using ecologically sustainable methods. Access is via a metalled track which runs from Downholme Bridge, west though Low Oxque and through to Marrick. The YNU made a very short visit to High Park in 2014 when the malacologists found the uncommon Lapidary Snail *Helicigona lapicida* and Heath Snail *Helicella itala*. It was considered interesting enough to devote another day to surveying in the area during June 2015.

Much of the country rock between Dales Beck and the River Swale is covered by drift or by alluvial deposits on the Swale Valley floor, but the Main Limestone is fully exposed towards the northern boundary of Marrick Park, as are some of the overlying Richmond Chert series. Just north of the access track at SE095982 the limestone has been extensively worked by shallow quarries. Down slope towards the river the drift is underlain by the Underset Limestone and the 27 Fathom Grit. All these beds are cut off and down thrown in excess of 70m by the NW-SE Marrick Great Vein which cuts across to the west.

Marrick Park land starts at the cattle grid beyond Oxque farm (at SE100983) where there are some lovely hay meadows which are being sympathetically managed. The uncut trackside edges are very interesting botanically and have abundant and diverse insect life. To the south of the access track is Thorny Park (SE096981 to 094981), 3.3ha of dense Ash-Hazel woodland to the east which has had minor inter-planting near its edges. This can probably be considered as a PAWS (Plantations on Ancient Woodland) site. A small start on coppicing has been made but resources are currently not available to increase this opening up and conversion back using traditional management. A full biological survey of this wood would be welcome. It is separated by an area of rough, acid? pasture with sparse scrub from a small modern plantation further west (SE094981). The River Swale borders the southern edge of the land where there is more rough pasture land which is botanically rich on parts of the steeper slopes and the wet pastures alongside the Swale, which is edged by a narrow strip of riparine woodland, mainly Wych Elm *Ulmus glabra* and Alder *Alnus glutinosa*. The extensive shallow quarries are surrounded by short, high quality CG9 grassland and to the west are areas of dry cherty limestone scree with some Hawthorn *Crataegus monogyna* scrub. Scattered throughout High Park are the stumps of very large, long-dead Wych Elm and Ash *Fraxinus excelsior* trees. On the more acid grassland above the quarries is a dense linear plantation (*c.*1.5ha) of young mixed deciduous trees.

Pied Flycatcher usually breeds in the small woodlands near the river. These are also good areas for Redstart, Dipper, Grey Wagtail, Kingfisher, Common Sandpiper, Pied Wagtail and Grey Heron which all use the river area. Usually there are Spotted Flycatcher nesting on Marrick Park House and its outbuildings. To the west of the house is a walled vegetable garden and a large shady garden with many mature exotic trees and shrubs. The garden to the south of the house, separated from the pasture by a ha-ha wall, is mainly treated as a planted wildflower meadow. Here last year a Stoat was observed playing with its four kits.

The limnologists are encouraged to visit the river as the first caddis, mayflies and stone flies should be about. Otter is occasionally seen on the river (the usual sign being skinned Toad torsos and crayfish remains in riverside pools). Although much of the river bed is rocky, temporary shingle banks accumulate inside meanders. When relatively stable these riverside sediments become covered by a ruderal community dominated by the invasive Himalayan Balsam *Impatiens glandulifera* but they have many other plants including Monkeyflower *Mimulus guttatus* and docks. Examination of the riverside sediments at SE091978 across from Stainton Low Wood could refind the uncommon cranefly *Hexatoma fuscipennis* and other flies associated with gravel banks. Lepidopterists may find that the riverside sallows repay examination and early Aculeate Hymenoptera are often abundant on catkins.

Hazards of the area: The hillsides are very steep, so there is always risk from tripping and falling. It is also worth noting that the river edges may be impassable after heavy rain. Wear clothing appropriate for the early season and footwear suitable for rough ground. Any children in the party must be supervised by a parent or guardian at all times.

Accommodation: There is a large variety of accommodation in the Grinton, Reeth and Fremington area ranging from Public Houses, B & Bs, Guest Houses, Bunkhouse Youth Hostel, to list a very few. Most can be booked over the internet:
Arkleside Country Guest House, Reeth, DL11 6SG
Tel. 01748 884200, e-mail < enquiries@arklesidereeth.co.uk>
The Bridge Inn, Grinton, Richmond, North Yorkshire, DL116HH
Tel. 01748 884224, e-mail <atkinbridge@btinternet.com>
The Buck Hotel, Reeth, Richmond, North Yorkshire, DL11 6SW
Telephone: 01748 884210, e-mail: <buckhotel@btinternet.com>
The Dales Bike Centre, Fremington; http://www.dalesbikecentre.co.uk/
Tel. 01748 884908, e-mail <enquiries@dalesbikecentre.co.uk>
YHA Grinton Lodge, Grinton, Reeth, DL11 6HS
Tel. 0845 371 9636, e-mail <grinton@yha.org.uk>

Previous YNU visits to the area:
22-24.5. 1920 Reeth/Mid-Swaledale. Circular #285 Separate; *The Naturalist* 45: 253-258.
22-25.5.1953 Grinton/Reeth. Circular #531 *Naturalist* 78: Suppl. 1953: iii-v; *The Naturalist* (1953) 78: 173-175.
5.6.1981 Marske. Circular #720 Separate *The Naturalist* (1982) 107: 104-105
26.7.2014 Grinton & Harkerside Moor. Circular #888 *The Naturalist* (2014) 139: 76-78; *The Naturalist* (2014) 139: 230-234.
Plus several *ad hoc* visits 2009–2015 e.g. *The Naturalist* (2014) 139.

Circular No. 896

Divisional secretary VC61: Sarah White Yonder Cottage, Ashford Hill, Thatcham, Berkshire, RG19 8AX. Tel: 01635 268442 Email: sarahpriest656@btinternet.com

The VC61 meeting will be held on **Saturday 18 June** at **Wharram Percy Medieval Village**

Maps: 1:50 000 Landranger Sheets: 100 Malton and Pickering and 101 Scarborough.
1:25 000 Explorer Sheet: 300 Howardian Hills and Malton.

Meeting Place: Wharram Percy lies about 9 miles southeast of Malton and 4 miles west of Sledmere. Meet at the English Heritage car park (SE867645) at 10.30. The site is signed from the A166 at Wetwang along the B1248 northwards towards Malton. There are no toilet facilities.

Reporting Meeting: This will be at 16.30 in Thixendale Village Hall (SE843611). This is located in the main street of Thixendale village with parking behind the hall and on the roadside.

The area: Wharram Percy is among the largest and best preserved of the 3,000 or so deserted medieval villages known in Britain. It is perched on the side of a remote dale in the Yorkshire Wolds. The ruined church still stands amongst the grassed-over foundations of houses, lanes and strip fields.

The village is reached from the car park down a steep, sunken footpath c.700m long, eroded through long use by people and livestock. The path crosses the stream in the valley bottom to where the village was built. Alongside the beck is the line of the disused Malton and Driffield Branch railway, closed in 1965 and now the route of the Wolds Way long distance footpath. Wharram Quarry YWT reserve lies about 1km to the north along this footpath.

The habitats of the site include ungrazed, rank chalk grassland and scrub along the sides of the access path; grazed, semi-improved grassland around the foundations of the houses; mixed woodland; chalk stream, springs and damp grassland in the valley bottom; a number of large, over-mature Ash trees and stonework in the church, graveyard and stream culvert.

As the path down from the car park is 700m long and quite a steep climb back up, it is recommended that food and drink for the day is taken with you. There is a bench in the churchyard and there are plenty of gravestones to sit on too.

English Heritage, who owns the site, welcome our visit and looks forward to receiving our records.

References

Henderson, A. & Hitch, C.J.B. (2009). The Lichens of Wharram Percy Deserted Mediaeval Village. *YNU Bulletin* 52: 9-15

Wharram Percy Deserted Medieval Village. English Heritage Guidebook.

English Heritage website: www.english-heritage.org.uk

Circular No. 897

Divisional secretary VC62: Anthony Wardhaugh 13 Captain Cook's Crescent, Marton, Middlesbrough TS7 8NN. Tel: 01642 322935

Email: tonyandmoirawardhaugh@bt.internet.com

The VC62 meeting will be held on **Saturday 9 July** at **Ashberry YWT Nature Reserve, Rievaulx**.

The YNU Moth Group is invited to trap on the night of Friday 8 July. Generators or batteries will be required because there is no power source available.

Maps: 1:50,000 Landranger Sheet: 100 Malton and Pickering.
1:25,000 Explorer Sheet: OL26 North York Moors Western Area.

Meeting Place: Meet at 10:30 at Ashberry Farm (SE571844) where off road car parking has been arranged by the kind agreement of the farm owner Mr Walter Fenwick. The nearest toilet facilities are at Rievaulx Abbey car park (SE575849).

Reporting Meeting: This will be at 16:30 in Rievaulx Village Hall (SE576852) which is on the NW side of Rievaulx Bank, the road running through the village.

The area: Ashberry Reserve is c.52ha in area and is leased by the Yorkshire Wildlife Trust. For a map please see the YWT website (www.ywt.org.uk/reserves/ashberry-nature-reserve). The reserve occupies the sides and floor of a deep valley in a geologically complex area carved out by glacial melt water. The damp valley bottom lies on Oxford Clay and the valley sides are a mixture of sandstones, calcareous sandstones and oolitic limestone. The acidic soils of the valley floor are modified in places by calcareous springs and by the presence of limestone gravels and tufa. This geological complexity results in a variety of habitats in a small area.

On the valley floor, Bird's-eye Primrose *Primula farinosa* occurs around some of the wet flushes at what seems to be its only known site in VC62. Globeflower *Trollius europaeus* grows in the wet grassland along with Marsh Hawksbeard *Crepis palludosa*, Grass of Parnassus *Parnassia palustris,* Common Butterwort *Pinguicula vulgaris* and Marsh Lousewort *Pedicularis palustris*. Several orchids are present including Early Marsh Orchid *Dactylorhiza incarnata* f. *incarnata* and f. *pulchella*, Marsh Helleborine *Epipactis palustris* and Common Spotted Orchid *Dactylorhiza fuchsii* and Heath Spotted Orchid *D. maculata* and their hybrid. Other plants of note include Broad-leaved Cotton Grass *Eriophorum. latifolium*, Black Bog-rush *Schoenus nigricans*, Lesser Pond-sedge *Carex acutiformis* and Pale Sedge Carex *pallescens*. The ancient semi-natural woodland of the valley sides is a mix of oaks, Ash and Silver Birch *Betula pendula*.

A stream flows through the reserve where White-clawed Crayfish *Austropotamobius pallipes* is known to occur. Terrestrial molluscs of the wetter areas include Short-toothed Herald Snail *Carychium minimum,* Large Amber Snail *Succinea putris,* Marsh Slug *Deroceras laeve* and *Euconulus alderi*. The Brown Snail *Zenobiella subrufescens* and the Ash-black Slug *Limax cinereoniger* occur in the woodland.

Woodland birds known from the reserve include Nuthatch, Treecreeper, Tawny Owl and Green Woodpecker. Breeding Wood Warblers have been recorded in the past. Mammals include Red Deer, Fallow Deer and Roe Deer.

Yorkshire Wildlife Trust welcome our visit and will appreciate receiving our records for the reserve.

Hazards of the area: Footpaths on the reserve are few. The valley bottom can be very soft and uneven underfoot, especially after heavy rain. The wooded valley sides are steep in places. A shallow stream runs through the reserve. Deer are known to visit the area so ticks may well be present.

Circular No. 898

Divisional secretary VC63: Joyce Simmons 16 Springfield Crescent, Kirk Smeaton, Pontefract, WF8 3LE Tel: 01977 620725 email: joyce@gentian.plus.com

The VC63 excursion will be on **Saturday 23 July** to **Austerfield Mosaic Trust Reserve, near Doncaster.**

Moth Trapping: Doncaster Naturalists will have a moth trapping session there on the evening of Friday 22nd. Please contact Joyce Simmons if you wish to join in.

Maps: 1:50,000 Landranger sheet : 111 Sheffield & Doncaster
1: 25,000 Explorer sheet: 279 Doncaster, Maltby and Thorne

Meeting Place: Meet in the Mosaic Trust Field Centre car park (SK661949) at 10.30. From Doncaster, take the A638 south towards Blyth. Turn south-east on High Common Lane at SK642973, then join the A614 south to Austerfield. The Field Centre is on the right soon after entering the village.

Reporting Meeting: In the Field Centre, available for tea, etc. from 15.30. Toilets are available all day.

The area: Austerfield is on the Lower Triassic Sherwood/Bunter sandstone belt which stretches north-south through Nottinghamshire and South Yorkshire. The soft red/brown sand is much quarried in this area and the VC63 excursion area is the site of previous quarrying from different times. There are active quarries close by. Boulders, pebbles and clay are present in some areas, allowing seasonal pools and ponds where the substrate is less permeable.

The open sandy areas have a sparse flora where Shepherd's Cress *Teesdalia nudicaulis*, Birds-foot *Ornithopus perpusillus* (Plate 7, centre pages) and Sand Spurrey *Spergularia rubra,* amongst others, survive in the generally dry conditions. The main pond is surrounded by willows, the amount of water there will depend on the season.

The deciduous woodland is dominated by oaks and Silver Birch, though other trees are present.

Many birds have been recorded here and Woodlark breeds in the area. The Labyrinth Spider *Agelena labyrinthica* (Plate 7, centre pages) was recorded here last year.

Circular No. 899

Divisional secretary VC64: Terry Whitaker 4 Crowtrees, Low Bentham Via Lancaster LA27EE, Tel: 01524 262269 Email: t.whitaker1@btinternet.com

The VC64 meeting will be to the **Northwest of the Ingleborough Nature Reserves complex**, in SD77, on **Saturday 20 August** 2016, with access to the Yorkshire Wildlife Trust sites (Salt Lake Quarry SSSI, Ashes Pasture SSSI and Southerscales NR) and Natural England's Scar Close NNR, Ribblehead Quarry NR, Colt Park Wood SSSI and Colt Park SSSI Hay Meadows.

The YNU Moth Group is invited to trap on the Friday night - generators/batteries will be required at many locations.

Maps: 1:25,000 Explorer OL2 (Yorkshire Dales Southern & Western Areas).

Meeting place: 10:30 at Colt Park Barn (SD772778); parking available.

Reporting meeting: 16:00 at Colt Park Barn, Meeting Room. TMW will provide tea & biscuits.

The area: The Ingleborough triangle is a mainly highland area of c.90 square kilometres which ranges from 150m asl. in the south near Austwick to 626m at the summit of Ingleborough, the second highest peak of the YDNP. It occupies most of grid square SD77. The majority of the area is over 250m and is dominated by outcropping limestone rocks. With its varied topography and mix of acidic and lime-rich soils, there is a rich diversity of habitats, many rare in the British Isles, and these support rare animals and plants, including several arctic-alpines on the higher parts.

Much of the upland area to the southwest of Colt Park is grazed (NVC U4) grassland dominated by Mat Grass *Nardus stricta* and Heath Bedstraw *Galium saxatile* and ,as such is of low botanical interest but on the rewilded (grazing excluded) areas of South House Moor (SD7676) there is recovering sub-scrub heath associated with NVC M16 *Erica tetralix* - *Sphagnum compactum* wet heath which grades into a variety of blanket mires M17, M18 & M19 on the slopes and drainage-impeded areas. Bilberry *Vaccinium myrtillus* has become more abundant especially in the areas of NVC H9, which is dominated by Heather *Calluna vulgaris* and Wavy Hair-grass *Deschampsia flexuosa*. Deep peat has accumulated on the higher moorland. Hare's-tail Cotton-grass *Eriophorum vaginatum* is dominant in these areas, with Heather, Cross-leaved Heath *Erica tetralix*, Crowberry *Empetrum nigrum* and Cowberry *Vaccinium vitis-idaea* and on the highest ground they are joined by Cloudberry *Rubus chamaemorus*. When the cliffs and the highest ground (above 600m) is reached some alpine botanical rarities may be encountered. If the botany is a bit restricted, the bird life is interesting. Areas of tall Heather are favoured by breeding Merlin, Short-eared Owl, Red Grouse, Golden Plover while Curlew, Snipe and Redshank breed around the grassy and rushy edges of the moor. This increased ericaceous cover may be suiting the Ring Ouzel which has occasionally bred on Ingleborough. Wheatear and a few Lapwing occur on the grasslands of the lower parts and the Meadow Pipit is the commonest bird of the nature reserves.

In recognition of its unique geomorphological and biological features, the area is notable in having one of the highest densities of SSSIs and Nature Reserves, both public and private, in the country and c.70% percent of the total area is under conservation management.

The excursion has permission to visit all of the Ingleborough NE reserves, especially Scar Close NNR, Scar Close Moss, Ribblehead Quarry NR, Colt Park Wood SSSSI and Colt Park Hay Meadows above Colt Park Barn. In addition it is hoped that we will visit some of Yorkshire Wildlife Trust's reserves including Ashes Pasture and Salt-lake Quarry.

Scar Close NNR (SD7577)
The ungrazed parts of Scar Close probably form the finest limestone reserve in the country with a great variety of NVC plant communities from W9 (*Fraxinus excelsior - Sorbus aucuparia - Mercurialis perennis* scrub), CG9 (*Sesleria albicans - Galium sterneri* grassland), MG2 (*Filipendula ulmaria - Arrhenatherum elatius* tall-herb grassland), H9 and H12 dry heath on peat over limestone. The area contains too many rare and unusual plant and invertebrates to mention in detail but among them are Northern Oak Fern *Gymnocarpium dryopteris*, Rigid Buckler Fern *Dryopteris submontanum*, Lesser Meadow Rue *Thalictrum minus*, Baneberry *Actaea spicata*, Yorkshire Sandwort *Arenaria norvegica* ssp. *anglica*, Alpine Cinquefoil *Potentilla crantzii*, Downy Currant *Ribes spicatum*, and Stone Bramble *Rubus saxatilis*. The butterflies Northern Brown Argus *Aricia artaxerxes*, Dark Green Fritillary, the micro-moths *Eana penziana*, *Crambus ericella* and the geometrids Thyme Pug *Eupithecia distinctaria* and Galium Carpet *Epirrhoe galiata* are examples of uncommon Lepidoptera. Scar Close is also one of two Dales sites for the large attractive brown and yellow tortricid *Aethes piercei,* which feeds in the roots of Devil's-bit Scabious *Succisa pratensis*. There are exceptional examples of karst geomorphology.

The adjacent Scar Close Moss is a large area of rather degraded flat wet heath and blanket bog on drift over limestone. Predictably, it is less speciose than the adjacent limestone habits but it is very under recorded. It is a known habitat for Pale Eggar *Trichiura crataegi* and Wood Tiger *Parasemia plantaginis* moths but Heath Rustic *Xestia agathina* (last recorded 1960) and Manchester Treble Bar *Carsia soriata* (a single record Aug 1997) may now be absent.

Ribblehead Quarry NR (SD767787)
This is an abandoned limestone quarry which is being allowed to revegetate with the minimum of intervention. Species are constantly being added to the site list. Raven has bred on the quarry ledges and Lapwing is usually present each spring.

Falling down a fern- and moss-draped cliff face, a stream issues from a short cave and runs around the quarry floor through several pools and past a wetland area before sinking into the limestone. The quarry floor is notable for an extensive area of palaeokarst pavement. There are few trees but a few planted willow, Alder and Juniper *Juniperus communis* are still struggling to survive near some shallow semi-permanent ponds. The deepest is a small, but old-established, permanent pond dominated by fish (thought to be Roach *Rutilus rutilus* or possibly Rudd *Scardinius erythrophthalmusi)* which supports a wide variety of invertebrates and marginal plants. In some of the wetlands there are rarities including Marsh Helleborine

and Northern Spike-rush *Eleocharis austriaca*. In some of the damper grasslands near the entrance the Common Twayblade *Neottia ovata*, orchids *Dactylorhiza* spp. and other wetland plants are common. Several butterflies have been recorded as colonists including a strong colony of the Common Blue, associated with abundant Common Bird's-foot-trefoil *Lotus corniculatus*.

Colt Park Wood SSSSI (SD773778–774774)
This is a shady, mature Ash woodland with other trees such as willow, Mountain Ash *Sorbus aucuparia* and Bird Cherry *Prunus padi* on dissected limestone pavement. The accumulation of leaf litter supports a rich variety of ferns and mosses but hides deep holes in the ground. The scar edges are less shaded and support a variety of calcicoles. Mossy Saxifrage *Saxifraga hypnoides* forms mats in places and is thought to be the source of the rare Yellow-ringed Carpet Moth *Entephria flavicincta,* not recorded since 1993. The RDB3 Tipulid *Tipula alpina* was recorded from here in 1989.

Colt Park Hay Meadows (*c*.SD773776)
The meadows nearest to Colt Park are the site for an on-going study on the ecology and conservation of NVC community MG3 (*Anthoxanthum odoratum - Geranium sylvaticum* grassland) Northern Hay Meadows. To the south, above Colt Park Barn at SD771776, are some marshy meadows with patches of a tall herb community notable for the abundance of Globe Flower.

Ashes Pasture (SD775785)
This is flushed pasture on glacial drift, lightly grazed throughout the year. It has a mosaic of wet grassy habitats ranging from heathy to mire and acid to calcareous flushes. It is notable for its orchids including Small White Orchid *Pseudorchis albida* and Lesser Butterfly Orchid *Platanthera bifolia* and has many other unusual plants. Its invertebrates are not well known.

Salt-lake Quarry (SD772784)
An abandoned limestone quarry used during the construction of the Settle-Carlisle Railway watered by small springs. It has a mosaic of wet calcareous habitats ranging from willow carr and scrub to dryer calcareous grassland and mire. It is known for a few rare plants found under the willow scrub, including Round-leaved Wintergreen *Pyrola rotundifolia* and Coralroot Orchid *Corallorhiza trifida,* a saprophyte not seen for many years but Bird's-eye Primrose is abundant on parts of the periodically-inundated limestone gravel floor. A few plants of Viper's-bugloss *Echium vulgare* reflect the warm, sheltered nature of the pit. The corner has a small shady pond with much organic detritus. The invertebrate fauna is not well known but likely to be rich. Like Scar Close, it is one of the several sites around Ingleborough where the Silver-barred Sable moth *Pyrausta cingulata* can be seen.

Hazards of the area: There is a lot of very tussocky ground so there is always risk from tripping and falling. The limestone outcrops and quarries have many cliffs. Even the horizontal limestone is criss-crossed by deep clints and grikes and hides some deep pothole shafts. Please be very careful at all times. Do not work alone. The locations are at over 400m so wear clothing appropriate for the altitude and footwear suitable for rough ground. Any

children must be closely supervised by a parent or guardian at all times. There is no mobile phone service.

Accommodation: The Station Inn at Ribble Head, a few minutes from the station, offers B&B, camping, caravan parking and an adjacent bunk house email: info@thestationinn.net
In the same area you can rent the **Stationmasters House** email: rachel@sandctrust.org.uk
Slightly further down the valley near Chapel-le Dale: **Broadrake Farm** offers accommodation in a brand-new bunkhouse set in ecologically managed farmland. email: info@broadrake.co.uk, Tel: 015242 41357 and in the same area the **Hill Inn** offers two B & B rooms Tel: 01524 241256.
Further north on the Hawes Road, is **Gearstones Lodge Cottage**, self catering accommodation for up to six people email: cottage@gearstones.com Tel: 01924 463702.
Plenty of other hotel, cottage and B&B accommodation within six miles is available in Ingleton and Horton-in- Ribblesdale.

Previous visits to the area: Despite several visits to the southern parts of Ingleborough: Ingleton (1911, 1941, 1971), Clapham (1898, 1908), Austwick (1918, 1940) and Horton-in Ribblesdale (1892, 1967) It is rather surprising that the YNU has never had an excursion specifically to the northern side of the mountain.

For more information see:
http://www.natureinthedales.org.uk/get-involved/places-to-see-wildlife/ingleborough-nnr/ingleborough-nnr-self-guided-walks-leaflet.pdf
and the recently published New Naturalist's Volume: Lee, J. (2015) *The Yorkshire Dales* New Naturalist Library (Number 130), Collins.

YNU Calendar

Up-to-date information can also be found on the YNU website at: www.ynu.org.uk/events/general. Details for Sept to Dec 2016 can also be found in the previous issue.

Marine and Coastal Section events are seashore bioblitz days organised by the Univ. of Hull as part of the Heritage Lottery Funded project 'Capturing our Coast' and supported by YNU.

May	5	Entomological Section Field Meeting at Three Hagges Jubilee Wood, Escrick. Meet at 10.30 at the gate to the wood SE627394. Car parking is available.
	7	Bryological Field Meeting Holwick, Upper Teesdale (VC65). Meet at 10:00 at the Bowlees car park off the B6277 NY907282.
	7	Joint Conchological and Freshwater Ecology Sections Field Meeting to Bainbridge. Meet at 10.30 at SD93369018 on Cam High Road.
	8	Bempton Cliffs Bioblitz at RSPB Bempton Cliffs Visitor Centre, Cliff Lane, Bempton.
	8	Marine and Coastal field trip to Runswick Bay. Low water 0.5 metres at noon. Meet at 9.30 in the car park at NZ809159 on Cleveland Way.
	12-13	NFBR Conference Lancaster University, Bailrigg, Lancaster LA1 4YW.
	14	**VC65 Field Excursion** Marrick Park, Swaledale. Meet at Marrick Park (SE091981) at 10:30 (limited parking).
Jun	2	Entomological Section Field Meeting at Three Hagges Jubilee Wood, Escrick. Meet at 10.30 at the gate to the wood SE627394. Car parking is available.
	5	Marine and Coastal Section field trip to Boggle Hole. YHA Boggle Hole, Mill Beck, Fylingthorpe YO22 4UQ. Low water at 11.00 Meet 9.00 at NZ954040.
	15	Plant Gall Section Field Meeting at Whitecliff Wood LNR, Cleveland. Meet at 10.30 by play area at NZ708192.
	18	**VC61 Field Excursion** Wharram Percy SE8664.
	23	Plant Gall Section Field Meeting at Thorpe Marsh. Meet at 10:30 by the reserve entrance by the Norwood Gate, SE594087, on Fordstead Lane.
	25	Botanical Section field meeting to Ainderby Bottoms. Meet at 10:30 at Ainderby Steeple (nr Northallerton)church at SE334921. Joint meeting with BSBI.
July	6	Plant Gall Section Field Meeting at East Keswick Wildlife Trust. Meet at 10:30 in the car park at SE363453.
	7	Entomological Section Field Meeting at Three Hagges Jubilee Wood, Escrick. Meet at 10.30 at the gate to the wood SE627394. Car parking is available.
	9	**VC62 Field Excursion** Ashberry Pastures SE58. Meet at 10:30 at Ashberry Farm (SE571844) where off road car parking is available.
	23	**VC63 Field Excursion** Austerfield near Doncaster. Meet at 10.30 in the Mosaic Trust Field Centre car park in Austerfield, SK661949.
	24	Marine and Coastal Section field trip to Filey. Low water 1.0 metres at 14.30 Meet at 12.30 outside the café in the Country Park car park TA120814.
Aug	4	Entomological Section Field Meeting at Three Hagges Jubilee Wood, Escrick. Meet at 10.30 at the gate to the wood SE627394. Car parking is available.
	20	VC64 Field Excursion Ingleborough Nature Reserve SD772778.
	21	Marine and Coastal Section field trip to Sandsend. Low water 0.5 metres at 13.00 Meet at 11.00 in the car park next to Wits End café NZ860129.

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The Naturalist

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Please note change of email address for submission of articles, which should now be sent as an MS Word document to Dr A. Millard at **editor@ynu.org.uk**

Please look at a recent issue of the journal for a general idea of how to present your article. Also see *The Naturalist Guide to Consistency* on p77 of The Naturalist 1079 and please **avoid** the following:

- using any paragraph formatting and line spacings other than single.
- using tabs to tabulate information (please use MS Word table format).
- inserting any figures, graphs or plates into the text; indicate their proposed locations in the text and send them as separate files.

Good quality, high resolution images are very welcome and should be sent as .jpg files, with a separate MS Word file containing the caption and name of the person to whom the image should be attributed.

If electronic submission is not possible, contributions should be sent to Dr. A. Millard, Woodland Villas, 86 Bachelor Lane, Horsforth, Leeds LS18 5NF (Tel. 0113 258 2482).

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